HARD PYRAMID SCIENCE

FEATURING:

JOHN CADMAN W/ DANNY KERR & DOUG KEENAN

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EP. 034 - 21/04/2017

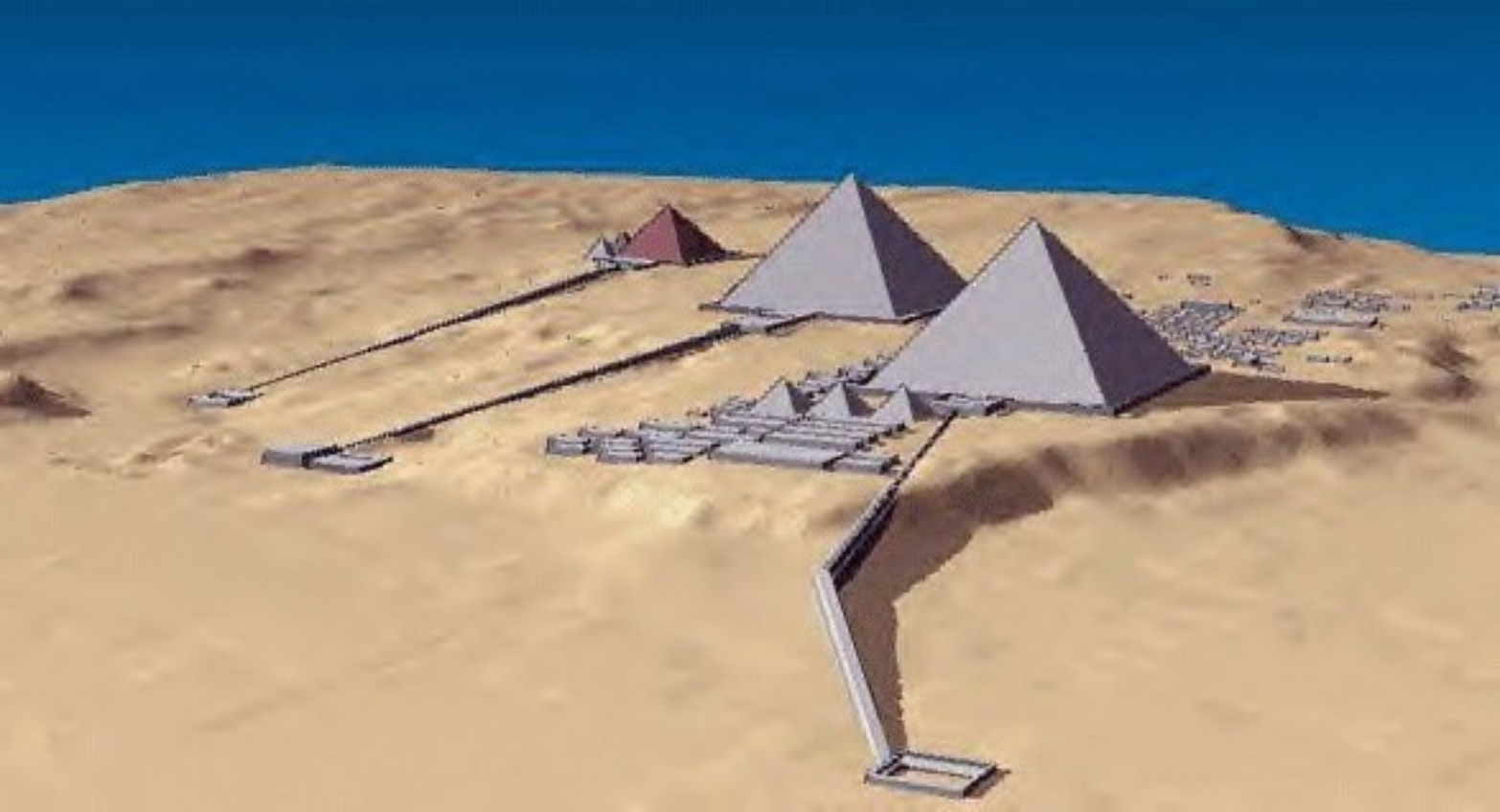
DEN OF LORE

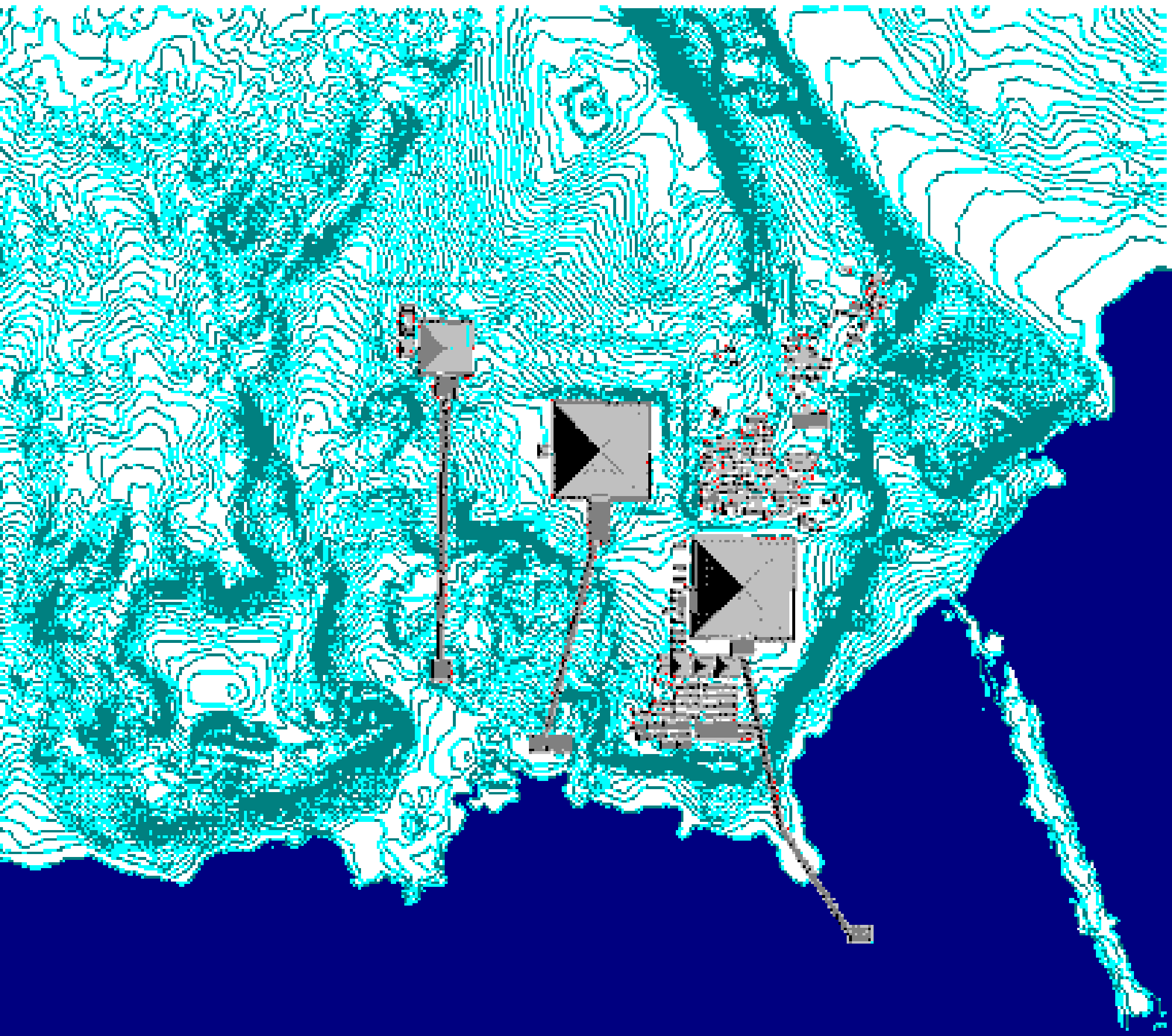
JOHN CADMAN — ENGINEER & INVENTOR

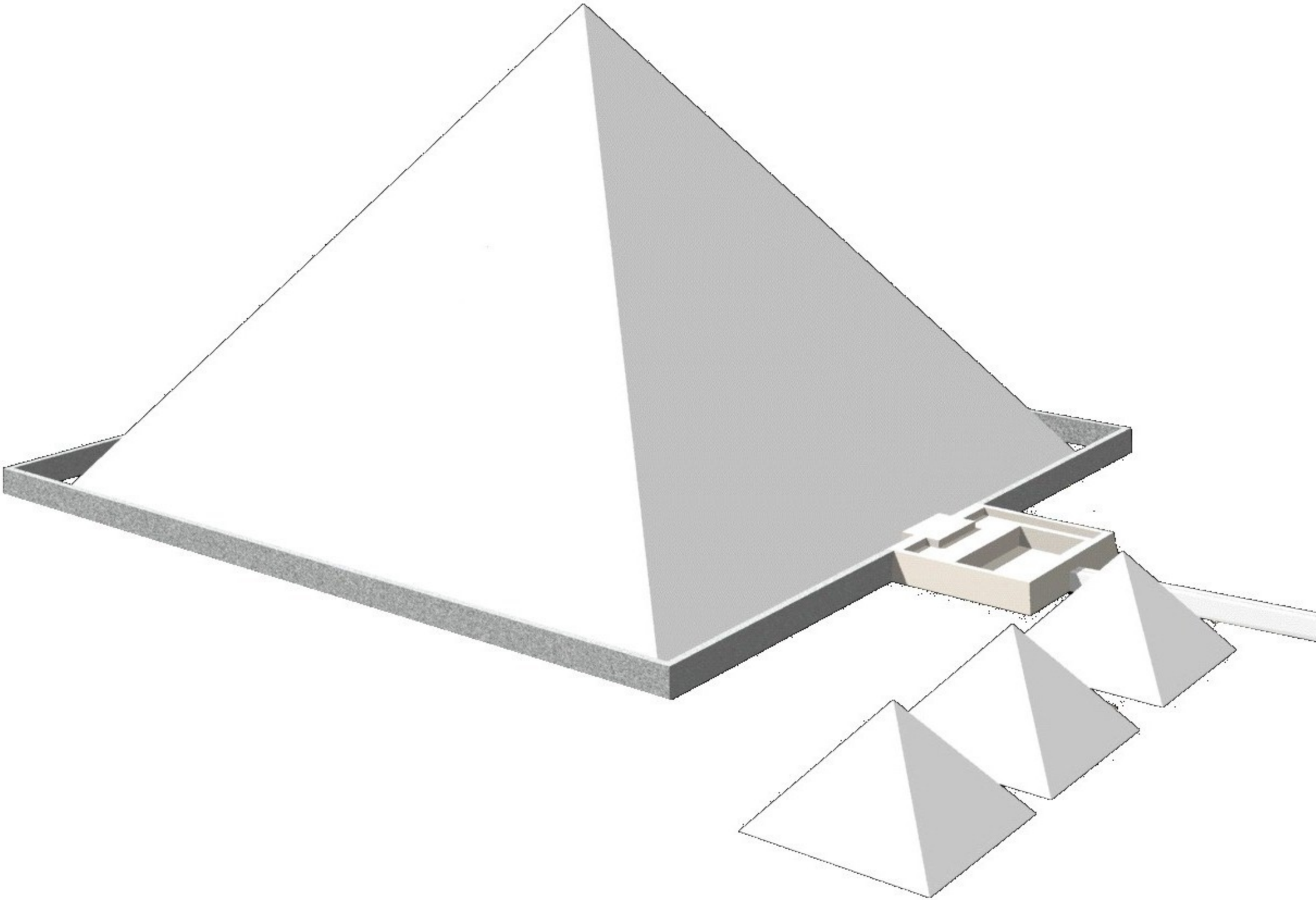

BU -
WZR
SHUBRA
EL KHEIMA
Heliopolis
Abu Roash
EL QÂHIRA
(CAIRO)
Giza
Tura
Zawiet
Abu-Sir
Memphis
Saqqâra
Helwân
Dashur
El Maya
Faiyum
Karanis
Lisht
El Sâff
Birket
Qârûn
Mcydum


N
Cairo
القاهرة
Suez
السويس
Gulf of Suez
© 2010 Europa Technologies
Map Data © 2010 AND
US Dept of State Geographer
© 2010 ORION-ME
Google
29°34'30.84" N 31°06'34.92" E elev 467 ft
Eye alt 277.67 mi


WATER SUPPLY FOR GREAT PYRAMID
Great pyramid / Giza plateau
extensive water tunnels
everywhere
Cairo القاهرة
Suez السويس
Nile with canal to Lake Moeris
Canal is definetely artificial
Moeris may be artificial
Nile had dam at canal entrance
Gulf of Suez
Google
© 2010 ORION-ME
29°34'30.84" N 31°06'34.92" E elev 467 ft
Eye alt 277.67 mi







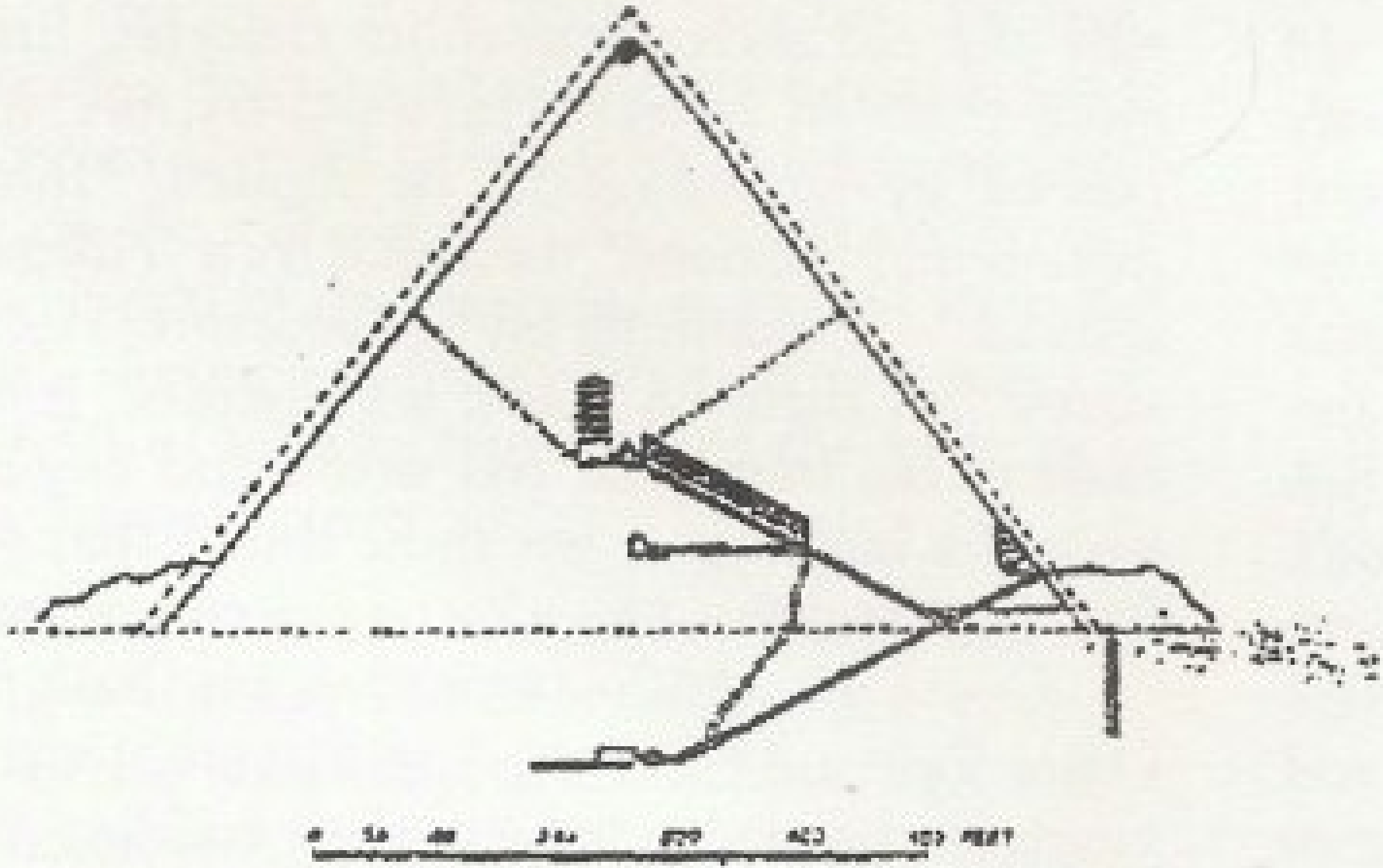
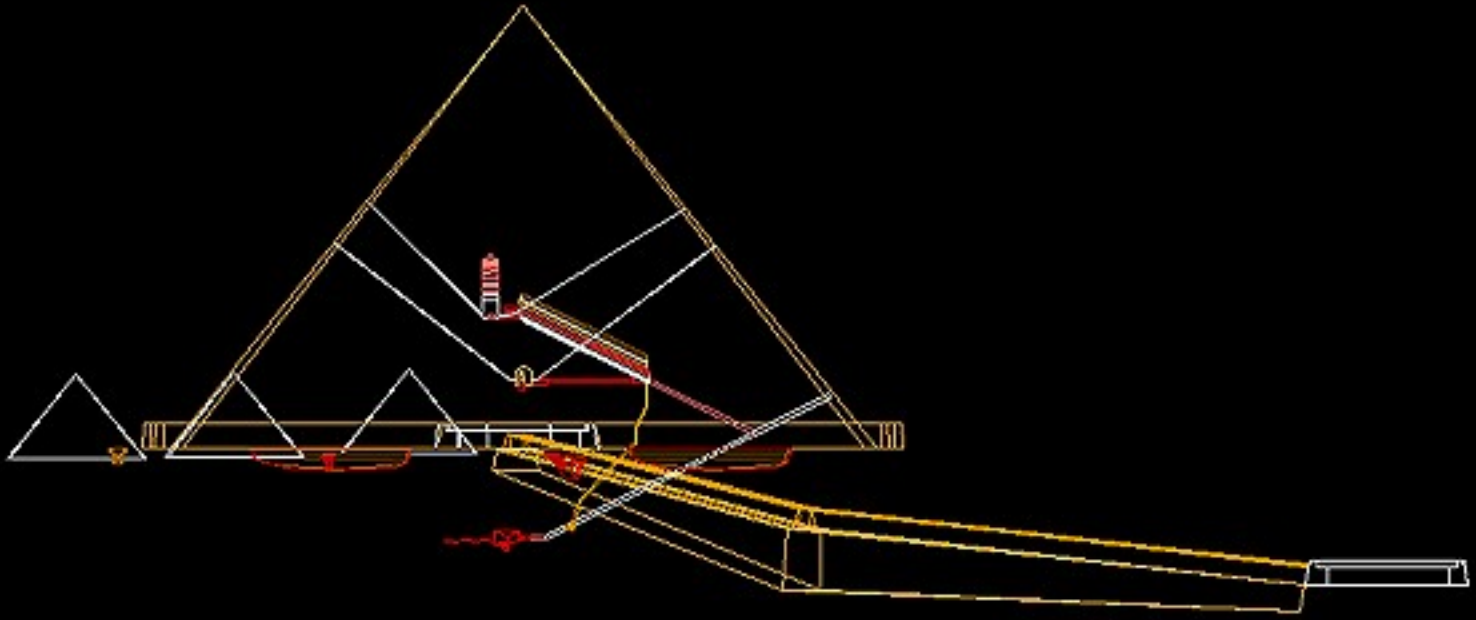


Fig. 12.—Section of Great Pyramid. From Vyse's *Pyramids of Ghizeh.*

15. Section of Great Pyramid from Vyse's *Pyramids of Gizeh*, 1839, showing well in front of entrance.



nde of Meridian passing through Gt Pyramid · 2h. 5m (nearly) East of Greenwich

Map of the Pyramids of Jeezeh,

and their hill of tombs in the African Desert, on the Western side of the Valley of the Nile.

after Howard Vyse.

Scale - 1/10,000

Sandy Plain

Ancient Rubbish mounds

Northern Causeway

Great Pyramid

Green cultivated land within reach of the Inundations of the Nile

To Village

East Tombs

Second Pyramid

Sphinx

King Shafre's Tomb

Isolated group of Trees

Sandy Plain

Southern Causeway

N

W E

S

Mean level of Mediterranean Sea in A.D 1865.

Great Pyramid

2nd Pyramid

3rd Pyramid

Level of water in wells in A.D 1865.

Meridian Section through Great Pyramid and its Hill, looking West. Scale - 1/1000

47.8 & 9 are Colonel Howard Vyse's for distinguishing the three small Pyramids near the 3rd & Great Pyramids respectively

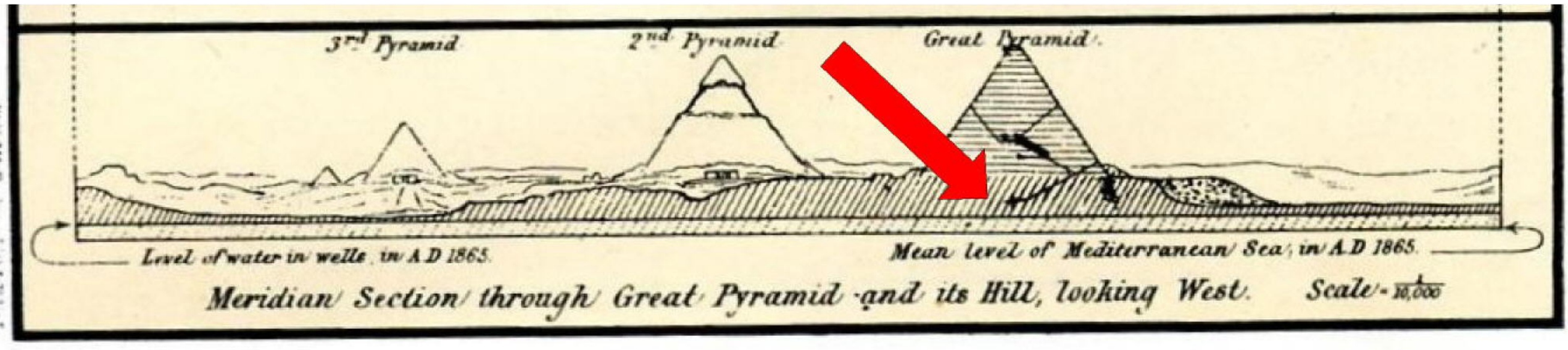
WATER SHAFT
ENTRANCE

TUNNEL

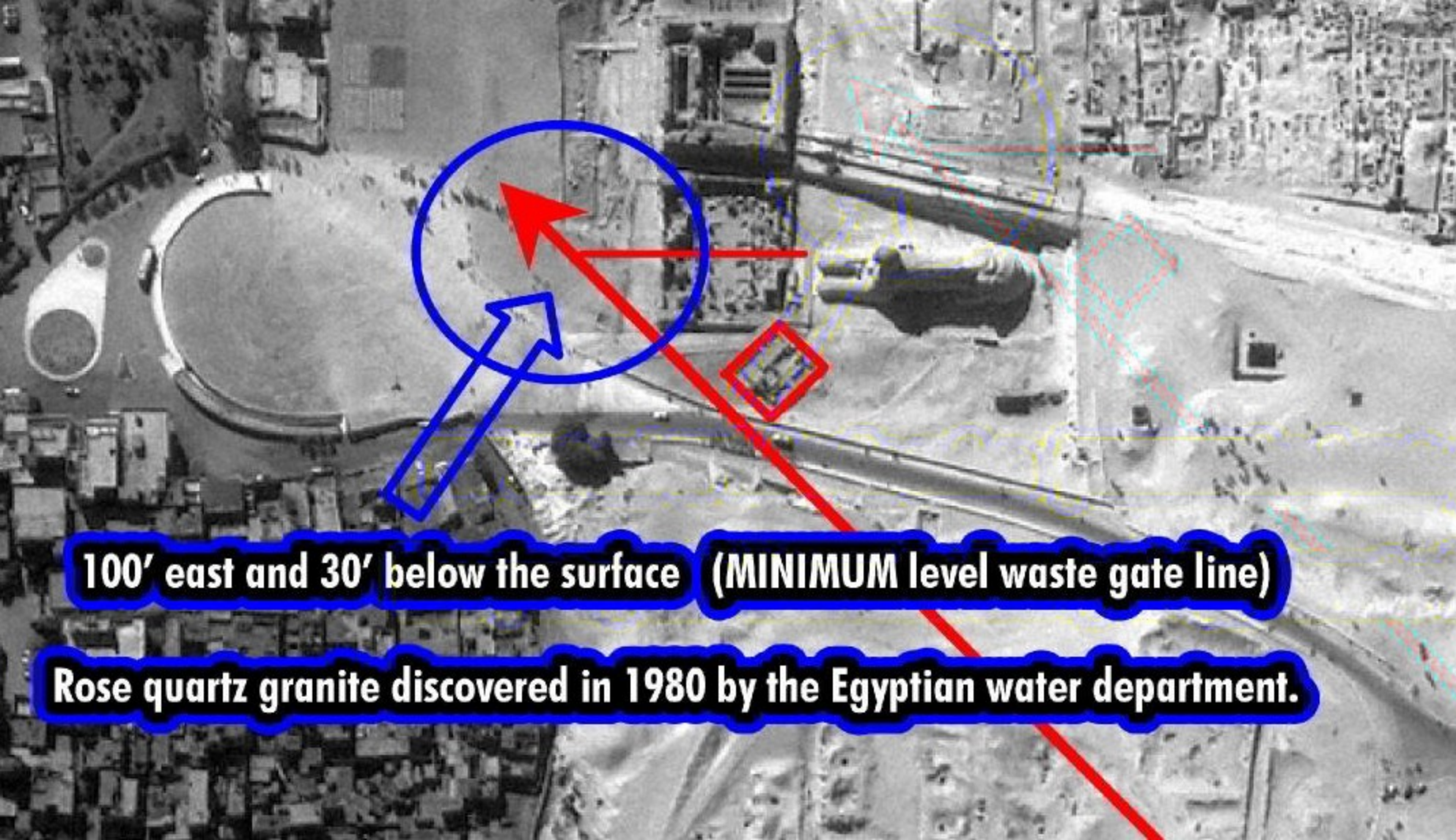
100′ east and 30′ below the surface (MINIMUM level waste gate line)

Rose quartz granite discovered in 1980 by the Egyptian water department.

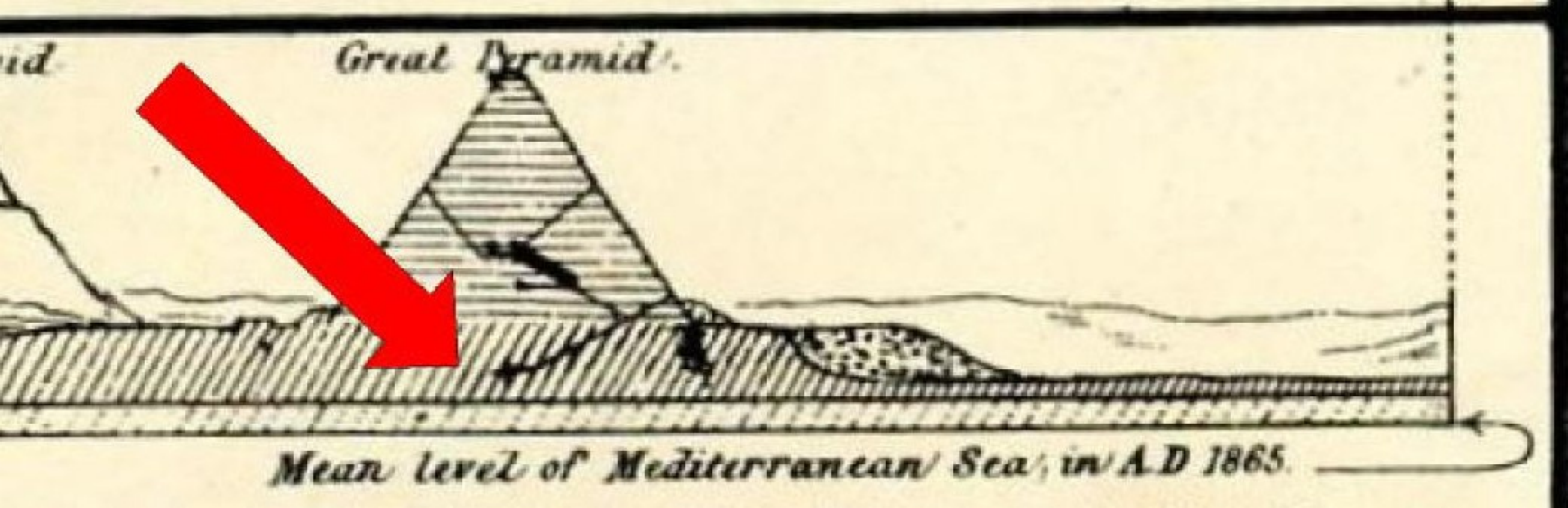
JOHN CADMAN
NOV '02



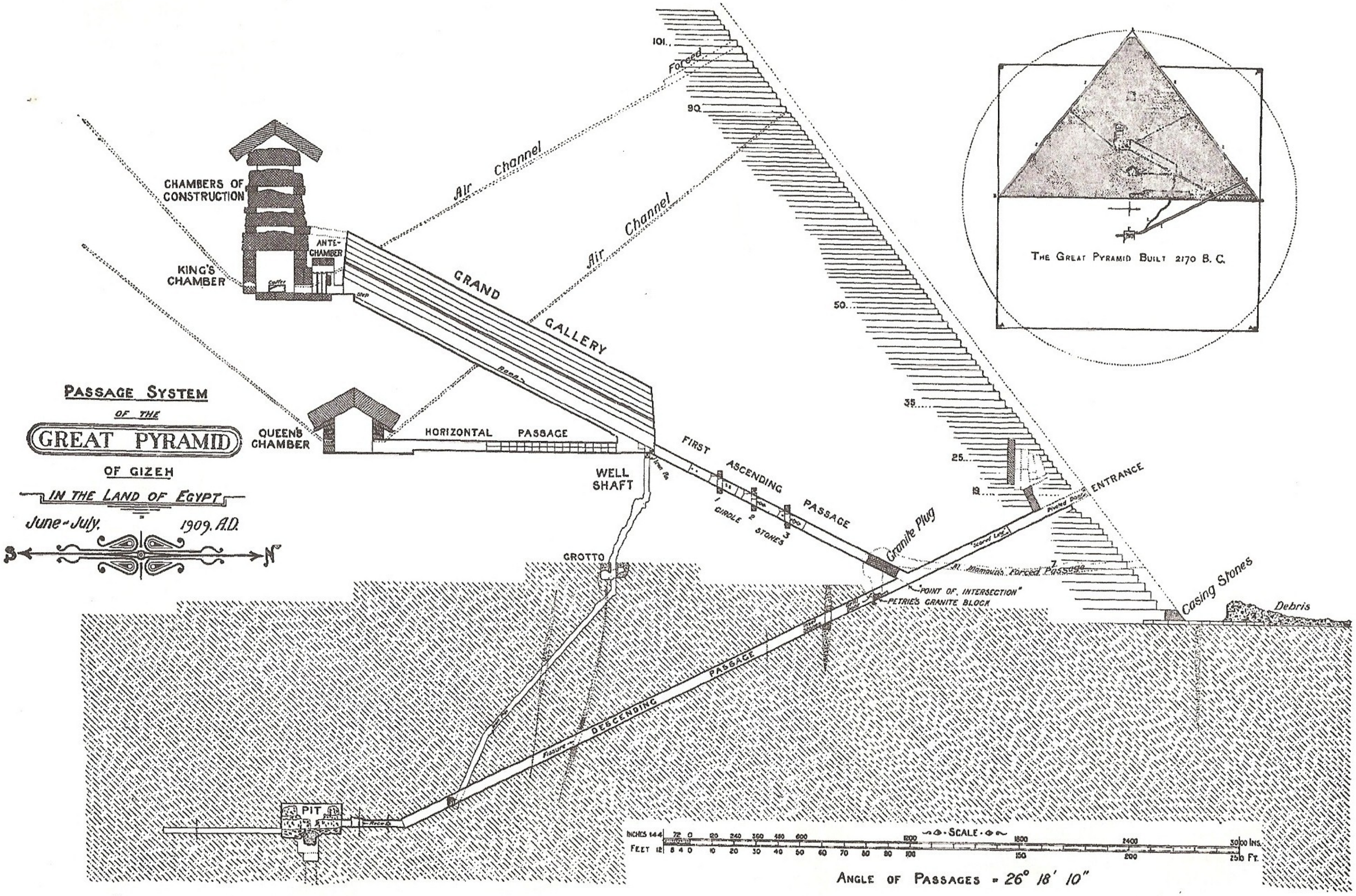
Meridian Section through Great Pyramid and its Hill, looking West. Scale - 1/10,000


100′ east and 30′ below the surface (MINIMUM level waste gate line)
Rose quartz granite discovered in 1980 by the Egyptian water department.

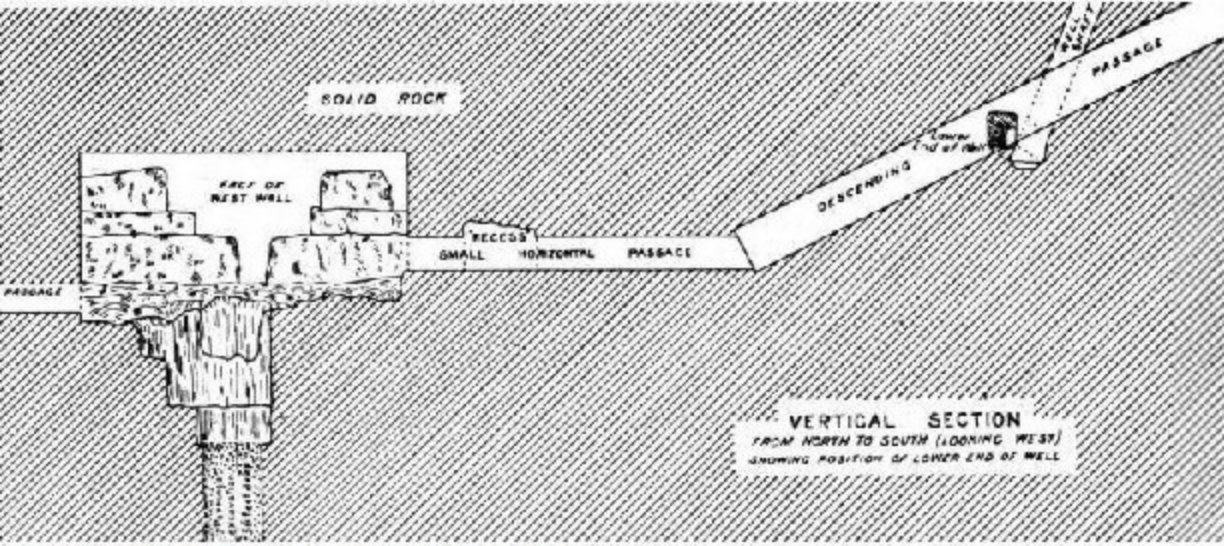

WATER SHAFT
ENTRANCE
TUNNEL


Great Pyramid.
Mean level of Mediterranean Sea, in A.D 1865.


WATER SHAFT
ENTRANCE
TUNNEL
West
JOHN CADMAN
NOV '02



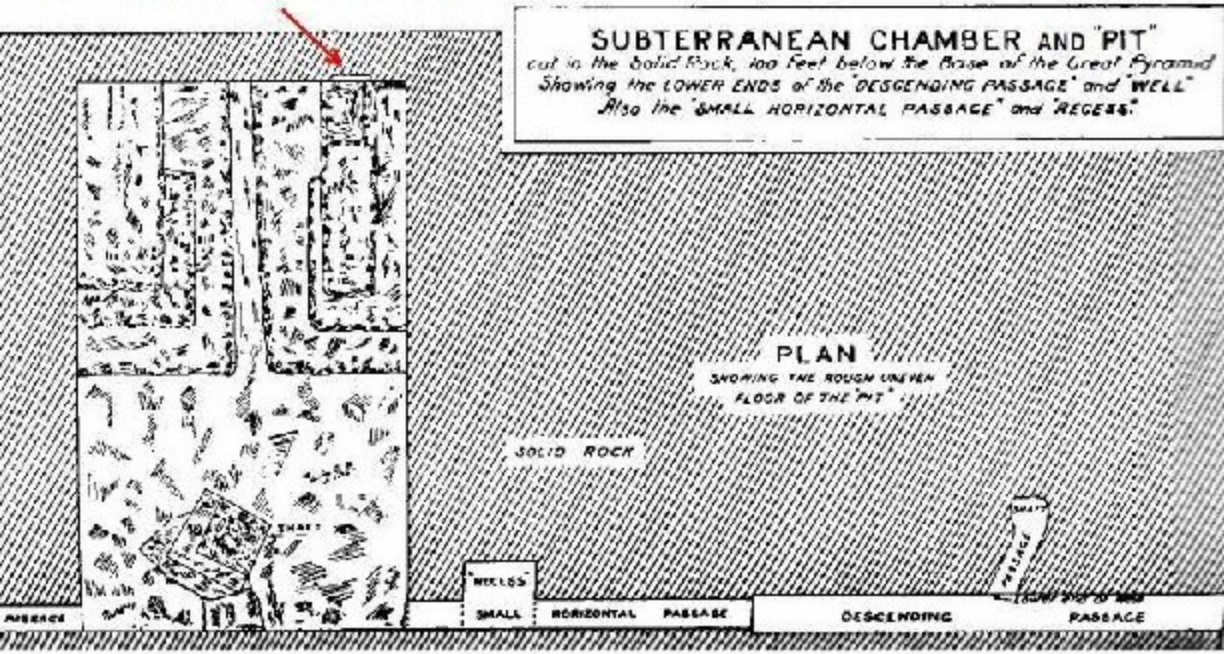
PASSAGE SYSTEM
OF THE
GREAT PYRAMID
OF GIZEH
IN THE LAND OF EGYPT
June-July. 1909. A.D.
S
N
CHAMBERS OF CONSTRUCTION
KING'S CHAMBER
ANTE-CHAMBER
GRAND GALLERY
Air Channel
Air Channel
Forced
QUEEN'S CHAMBER
HORIZONTAL PASSAGE
WELL SHAFT
GROTTO
FIRST ASCENDING PASSAGE
CIRCLE STONES
Granite Plug
"POINT OF INTERSECTION"
PETRIE'S GRANITE BLOCK
ENTRANCE
Al Mamoun's Forced Passage
Casing Stones
Debris
DESCENDING PASSAGE
PASSAGE
PIT
101
90
50
35
25
19
7
THE GREAT PYRAMID BUILT 2170 B. C.
SCALE
INCHES 144 72 0 120 240 360 480 600 1200 1800 2400 3000 INS.
FEET 12 8 4 0 10 20 30 40 50 60 70 80 90 100 150 200 250 FT.
ANGLE OF PASSAGES = 26° 18' 10"

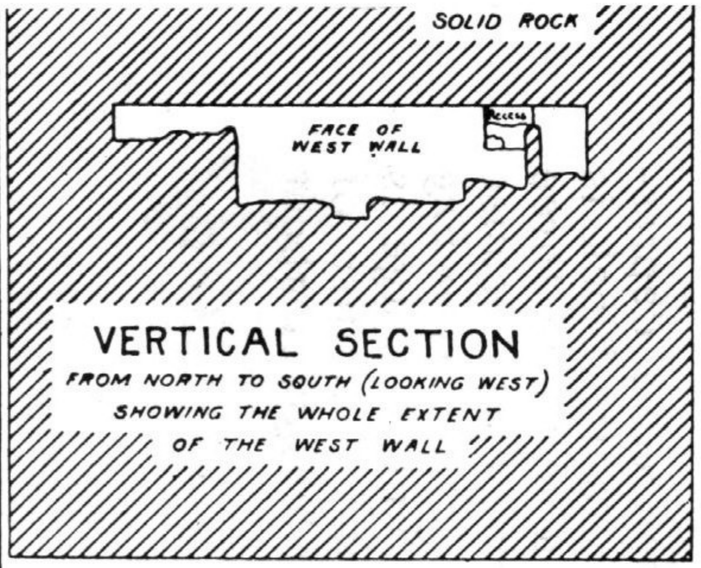


"PERRING'S EXCAVATION 36 FEET DEEP"

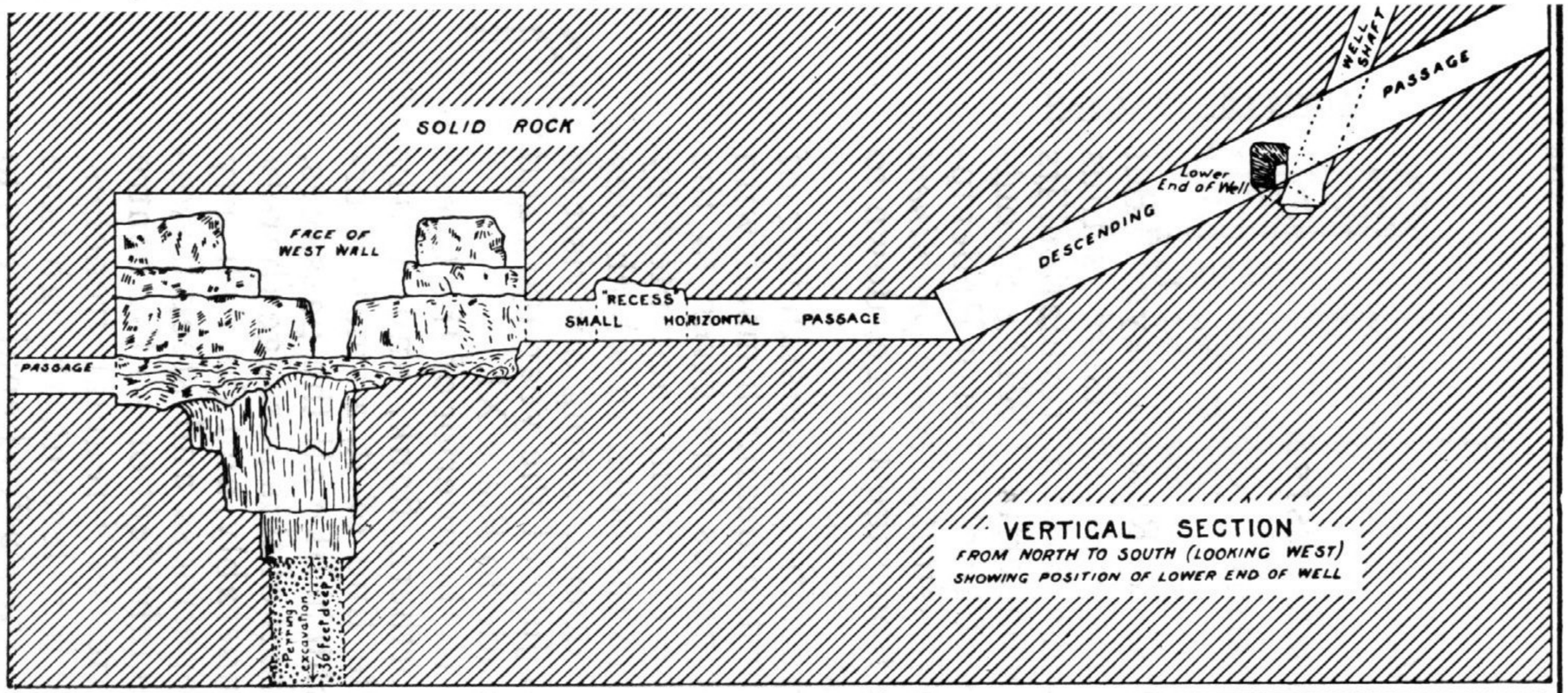
DRAWINGS BY EDGAR BROTHERS
CIRCA 1929

LOCATION OF "SMALL RECESS"

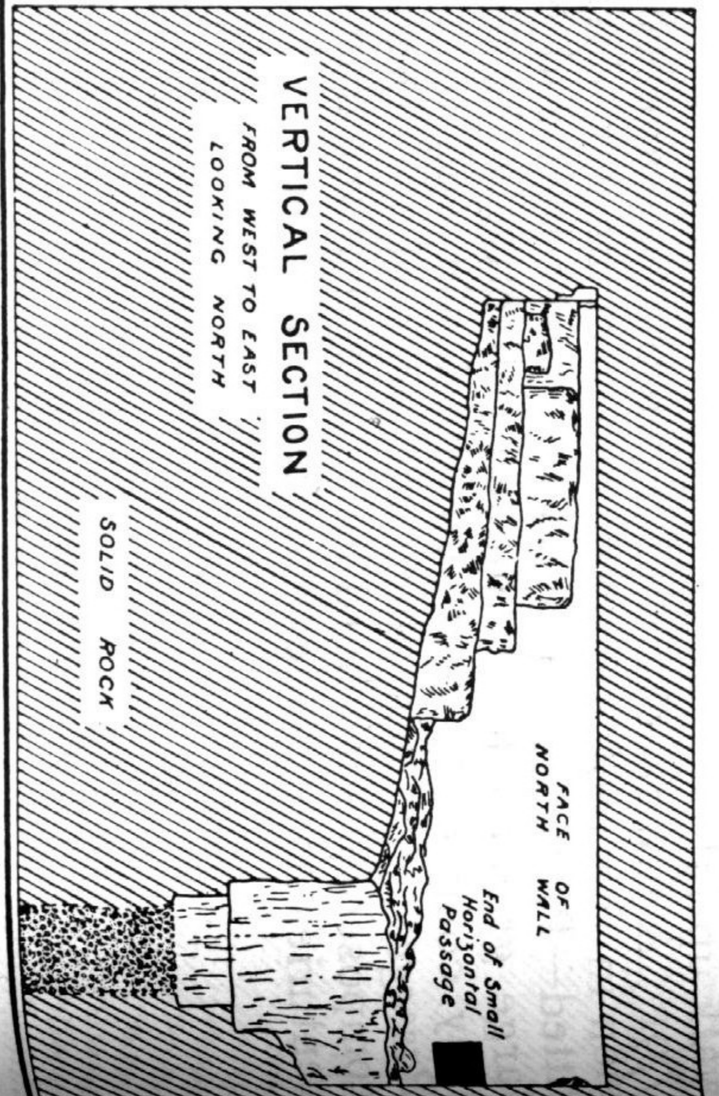




VERTICAL SECTION
FROM NORTH TO SOUTH (LOOKING WEST)
SHOWING THE WHOLE EXTENT
OF THE WEST WALL

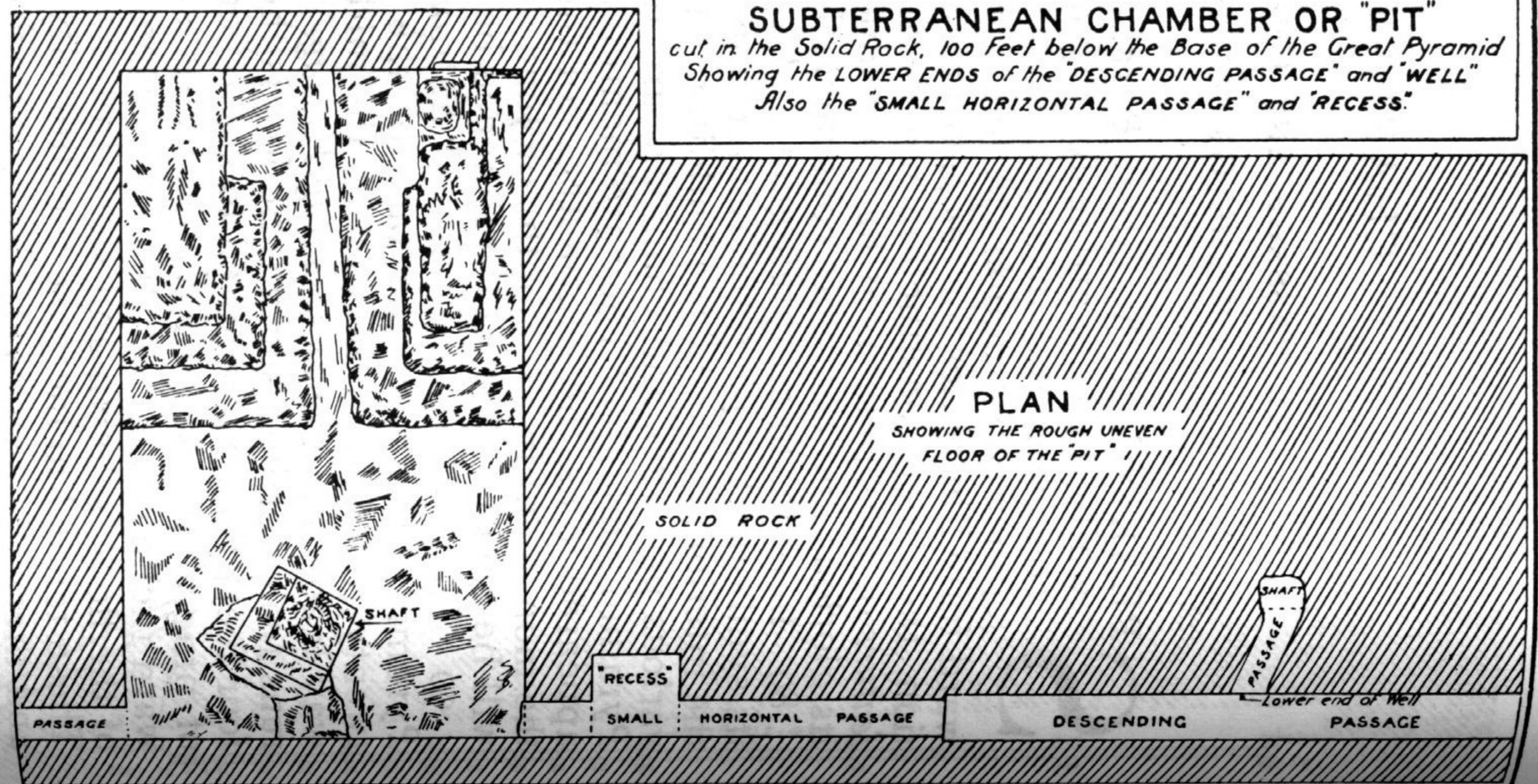


VERTICAL SECTION
FROM NORTH TO SOUTH (LOOKING WEST)
SHOWING POSITION OF LOWER END OF WELL

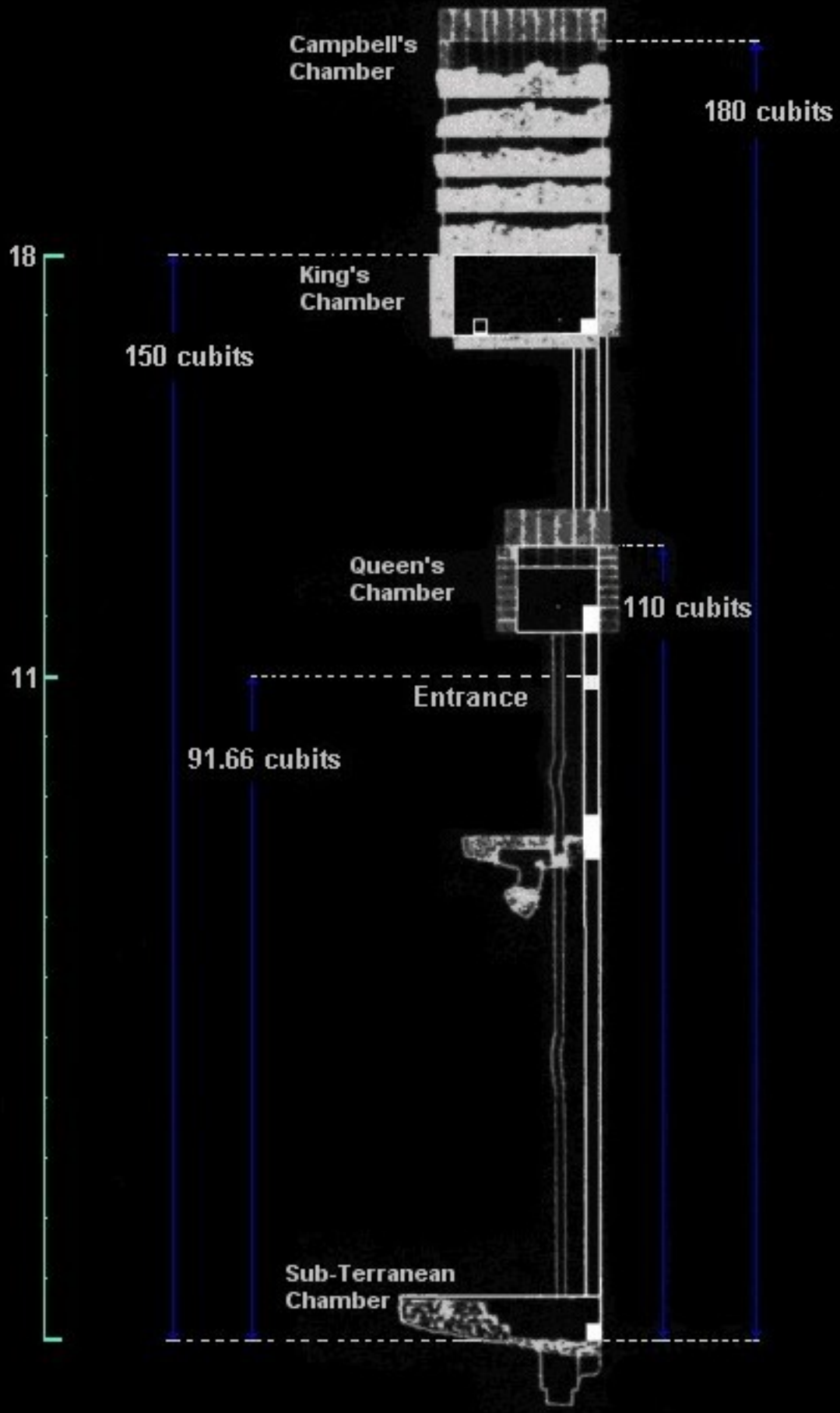


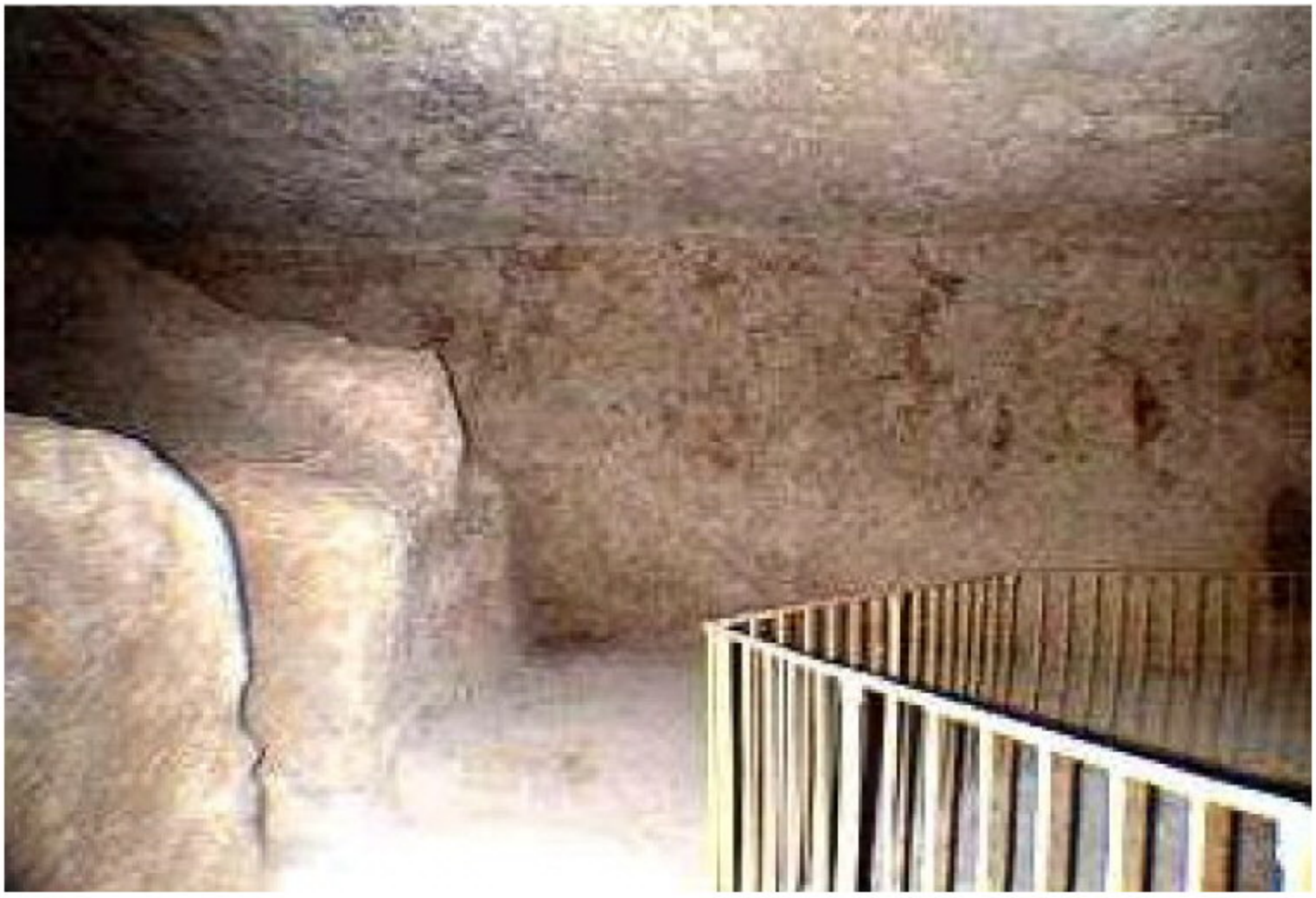
VERTICAL SECTION

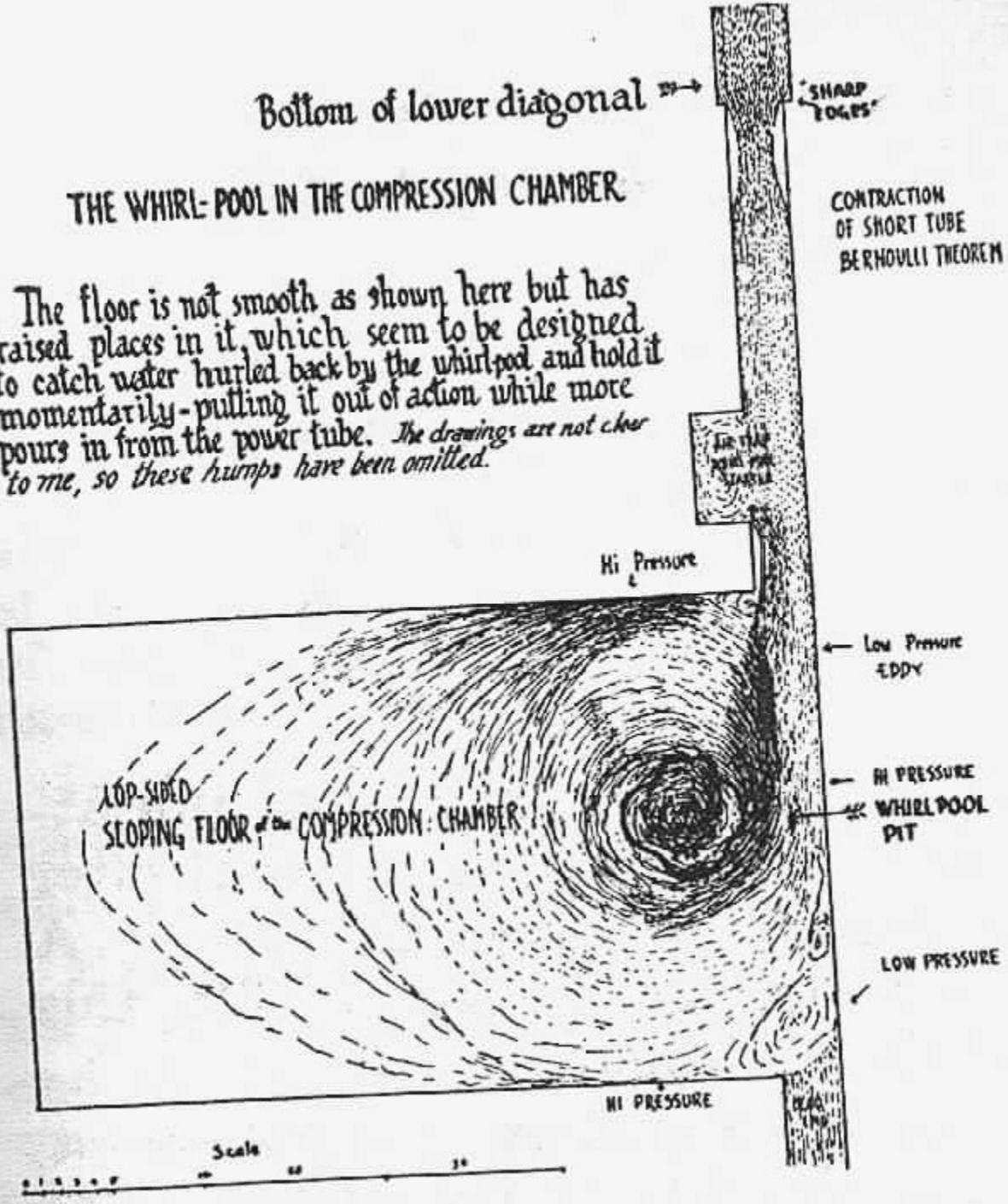
SUBTERRANEAN CHAMBER OR "PIT"
cut in the Solid Rock, 100 Feet below the Base of the Great Pyramid
Showing the LOWER ENDS of the "DESCENDING PASSAGE" and "WELL"
Also the "SMALL HORIZONTAL PASSAGE" and "RECESS."

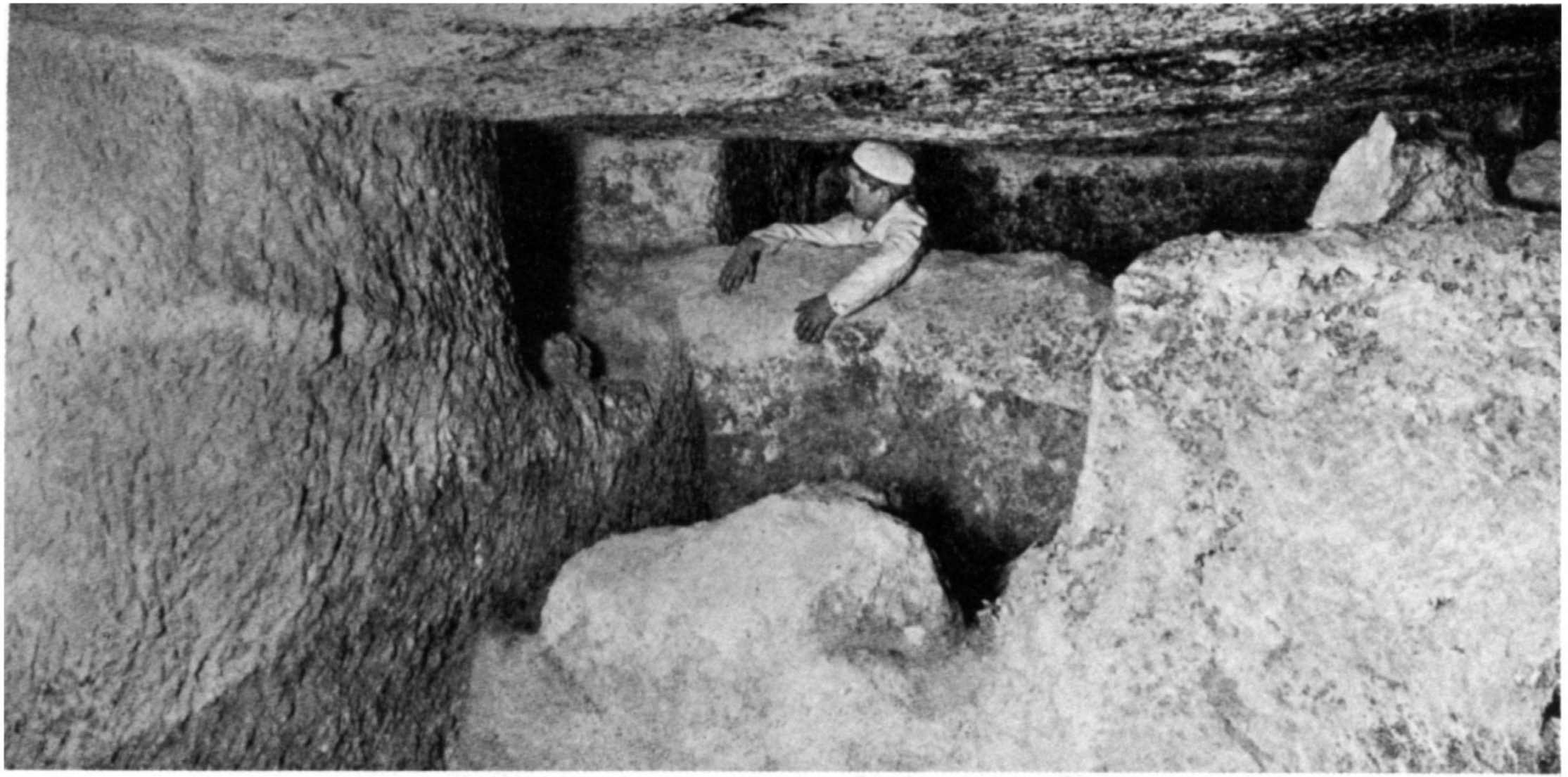


PLAN
SHOWING THE ROUGH UNEVEN
FLOOR OF THE "PIT"


Campbell's
Chamber
180 cubits
18
King's
Chamber
150 cubits
Queen's
Chamber
110 cubits
11
Entrance
91.66 cubits
Sub-Terranean
Chamber

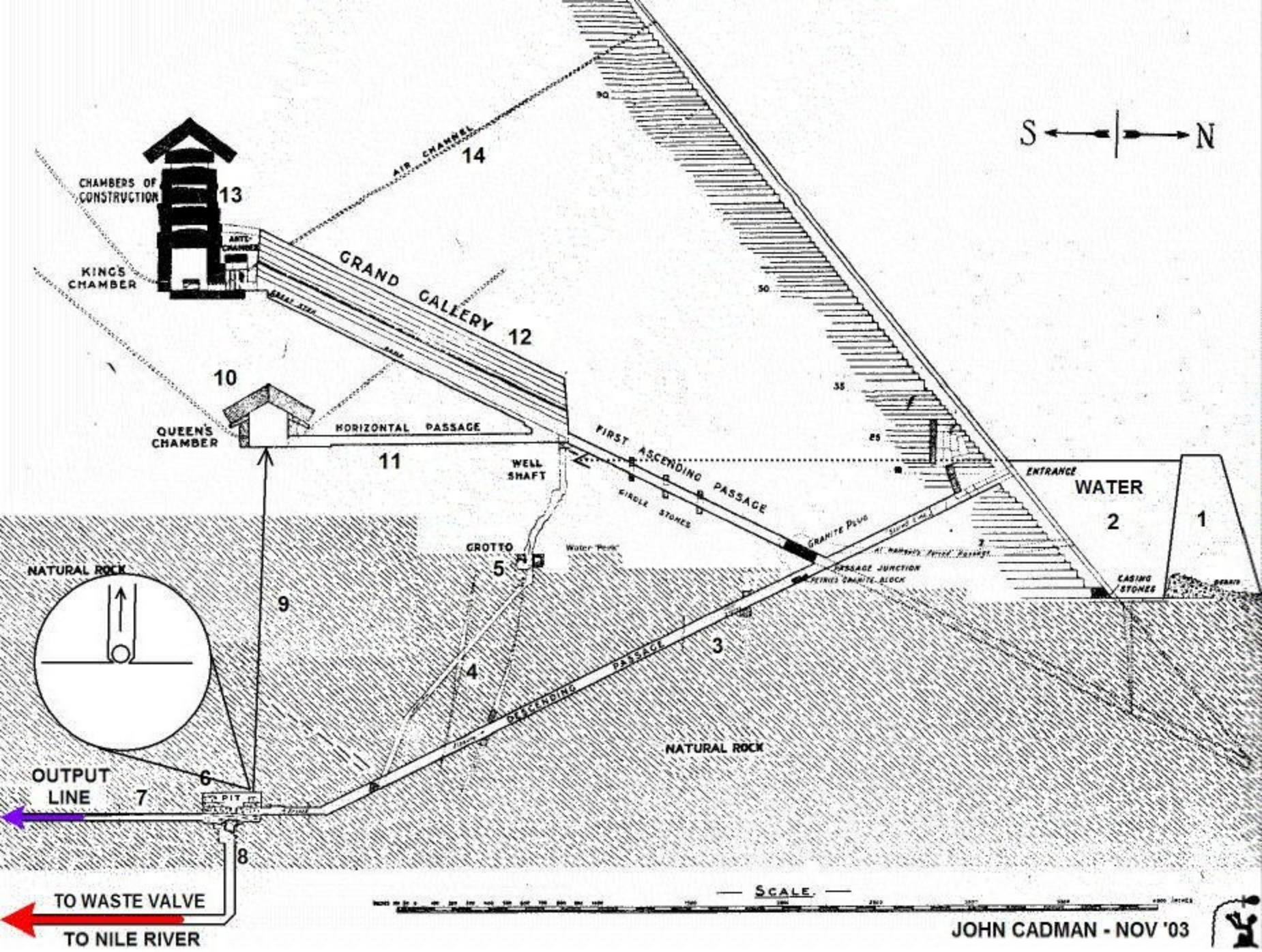


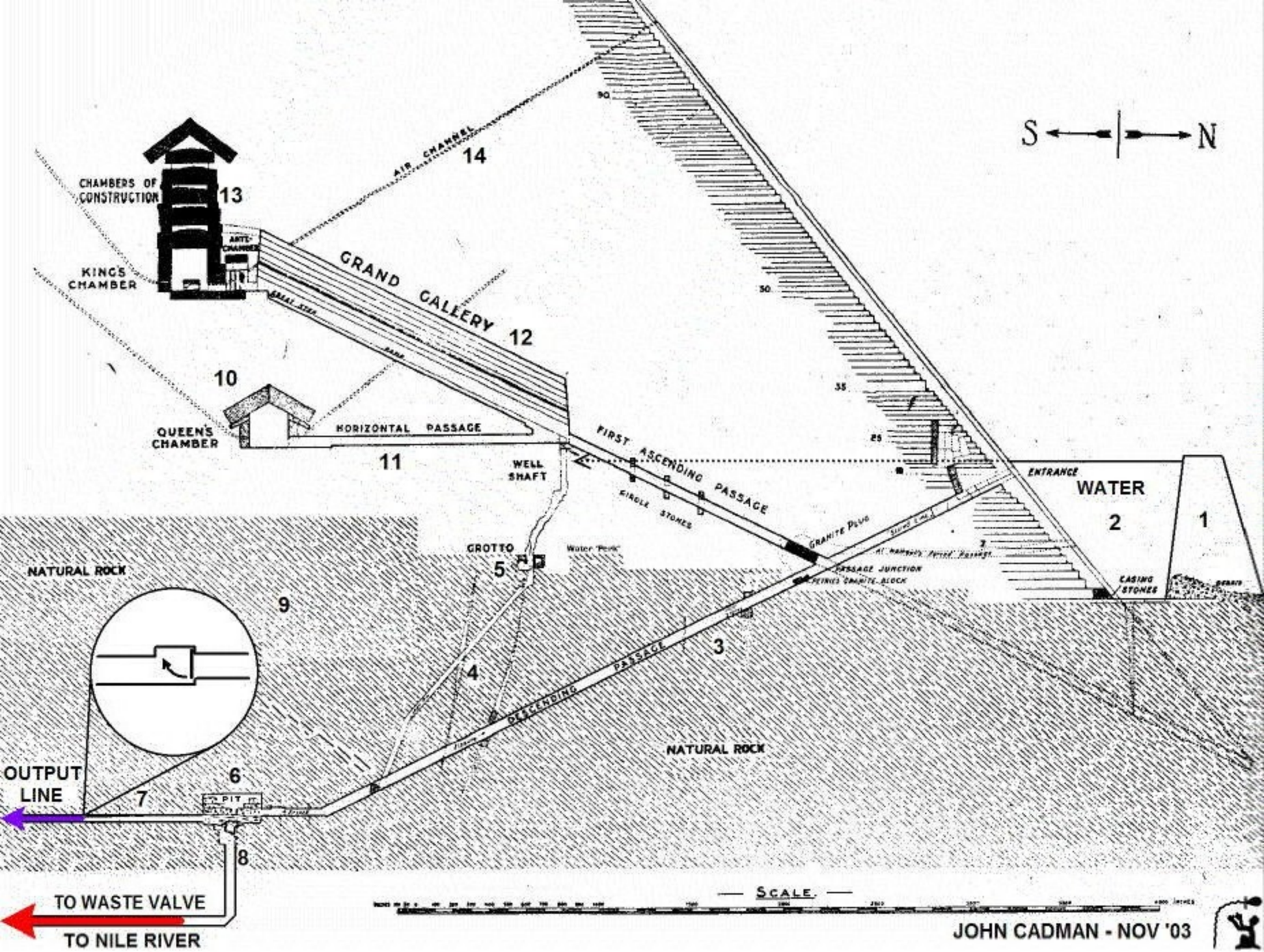

Bottom of lower diagonal
SHARP EDGES
THE WHIRL-POOL IN THE COMPRESSION CHAMBER
CONTRACTION OF SHORT TUBE BERNOULLI THEOREM
The floor is not smooth as shown here but has raised places in it, which seem to be designed to catch water hurled back by the whirlpool and hold it momentarily - putting it out of action while more pours in from the power tube. The drawings are not clear to me, so these humps have been omitted.
Hi Pressure
Low Pressure EDDY
Hi PRESSURE
WHIRLPOOL PIT
LOW PRESSURE
LOP-SIDED SLOPING FLOOR of the COMPRESSION CHAMBER
Hi PRESSURE
Scale



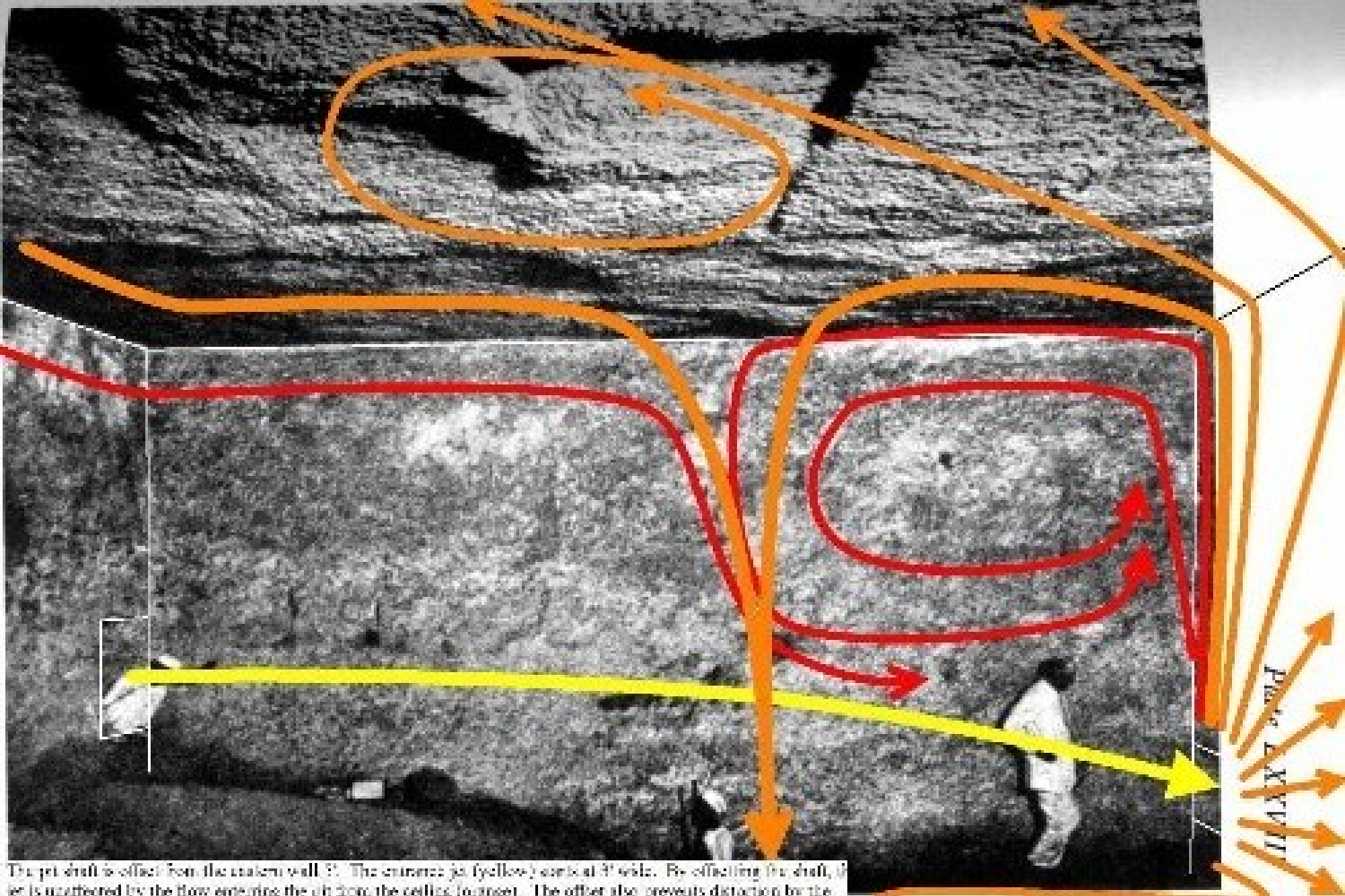
The north-west corner of the rock-cut ***SUBTERRANEAN CHAMBER*** *in the Great Pyramid of Gizeh ; showing the small recess in the west wall ; also Stanley looking over the thin ridge of rock which bounds the south side of the narrow stall-like cutting in the north corner of the chamber*


AIR REMOVAL LINE
JOHN CADMAN MAY '01


S
N
CHAMBERS OF CONSTRUCTION
13
AIR CHANNEL
14
KINGS CHAMBER
ANTE-CHAMBER
GRAND GALLERY
12
10
QUEEN'S CHAMBER
HORIZONTAL PASSAGE
11
WELL SHAFT
FIRST ASCENDING PASSAGE
GIRDLE STONES
GRANITE PLUG
ENTRANCE
WATER
2
1
CASING STONES
GROTTO
5
PASSAGE JUNCTION
PETRIE'S GRANITE BLOCK
NATURAL ROCK
9
4
3
DESCENDING PASSAGE
NATURAL ROCK
OUTPUT LINE
7
6
PIT
8
TO WASTE VALVE
TO NILE RIVER
SCALE
JOHN CADMAN - NOV '03


S
N
CHAMBERS OF CONSTRUCTION
13
AIR CHANNEL
14
KINGS CHAMBER
ANTE-CHAMBER
GRAND GALLERY
12
10
QUEEN'S CHAMBER
HORIZONTAL PASSAGE
11
WELL SHAFT
FIRST ASCENDING PASSAGE
GIRDLE STONES
ENTRANCE
WATER
2
1
GRANITE PLUG
GROTTO
5
NATURAL ROCK
9
PASSAGE JUNCTION
CASING STONES
4
3
DESCENDING PASSAGE
NATURAL ROCK
OUTPUT LINE
6
7
PIT
8
TO WASTE VALVE
TO NILE RIVER
SCALE
JOHN CADMAN - NOV '03


JOHN CADMAN FEB '04
X

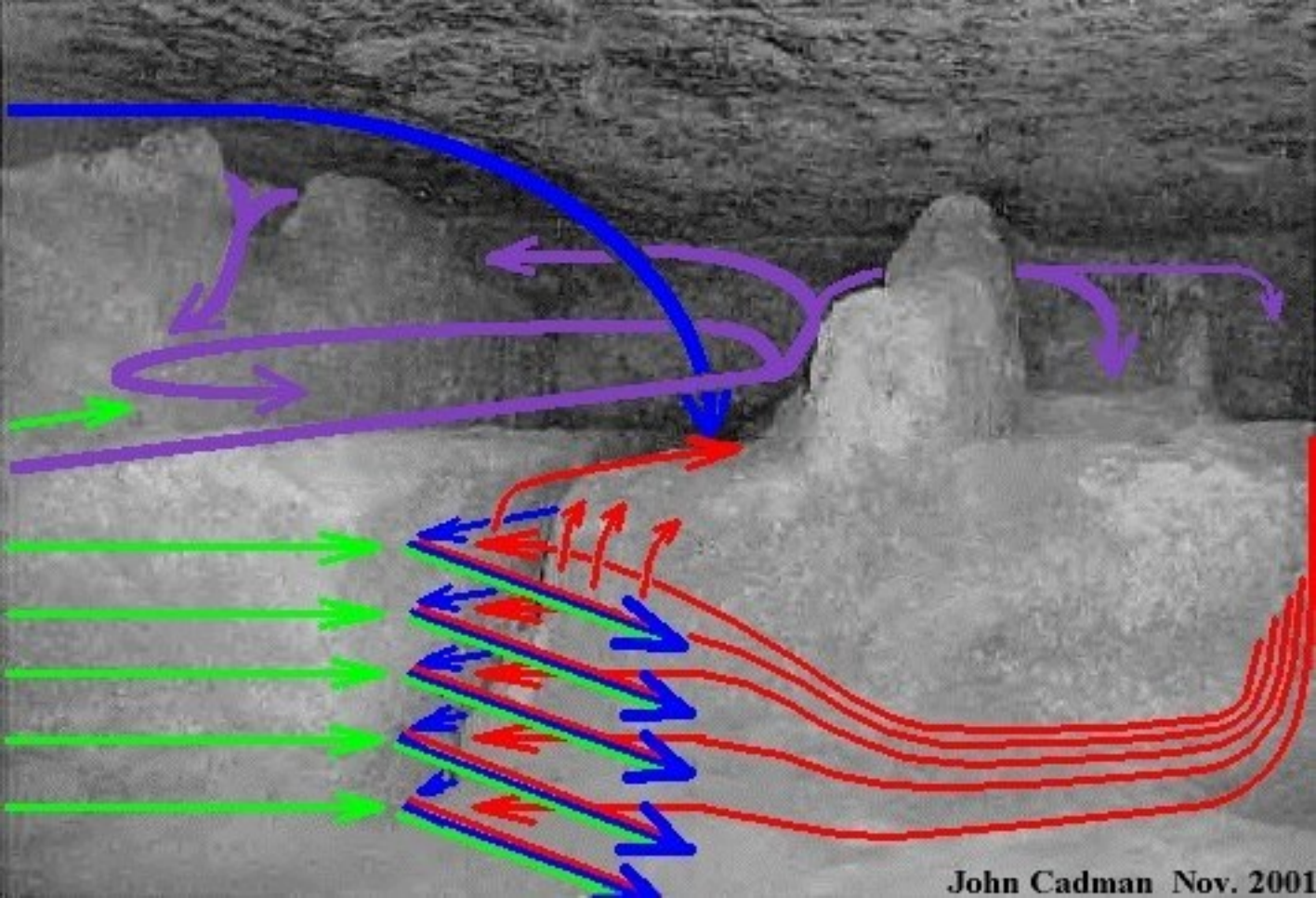


The jet shaft is offset from the eastern wall 3'. The entrance jet (yellow) enters at 9' wide. By offsetting the shaft, the jet is scattered by the flow entering the pit from the ceiling (orange). The offset also prevents distortion by the pit's vertical compression wave. The jet varies in velocity with respect to the base-pressure of the doubled shaft and pit line and reaches a maximum velocity of 202 ft/sec. Notice ceiling erosion and water marks on upper wall.

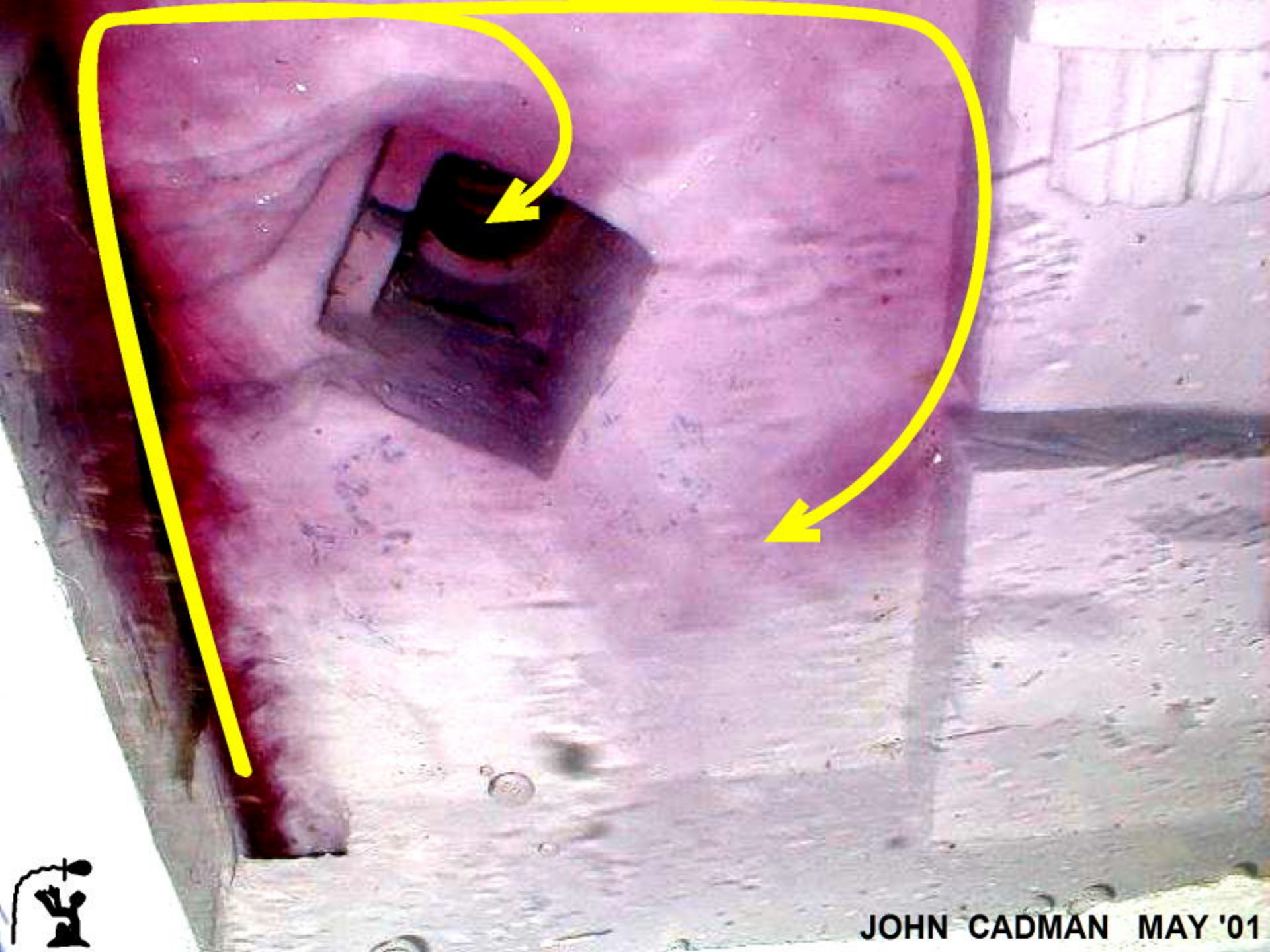
The rock-cut SUBTERRANEAN CHAMBER of the Great Pyramid of Giseh; showing the whole extent of the east wall, a large portion of the ceiling, part of the north wall to the left, and a small portion of the south wall to the right

Photo: Edgar Brothers

John Cochran - July 03


John Cadman Nov. 2001


GP's SUBTERRANEAN CHAMBER WATER FLOWS - JOHN CADMAN - JULY '03 PHOTO: SANTHA FAIIA

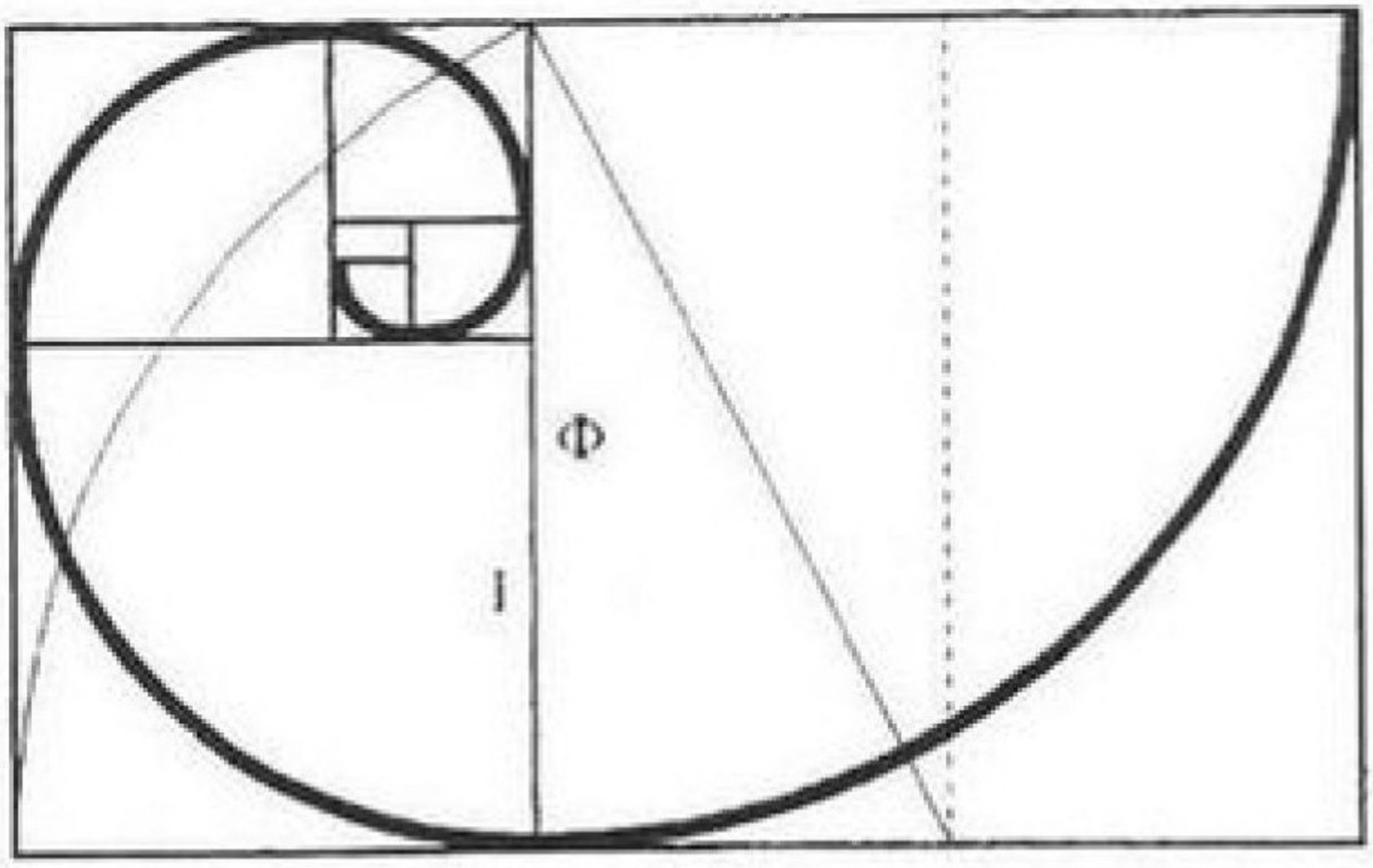

JOHN CADMAN MAY '01

Looking down on sub chamber model. The pit is offset from the eastern wall to allow for the flow entering the pit to not interefere with the entrance jet (yellow). The flows which do not enter the 'deadend' shaft are deflected (orange). John Cadman July '03


JOHN CADMAN JULY '02


JOHN CADMAN JULY '02

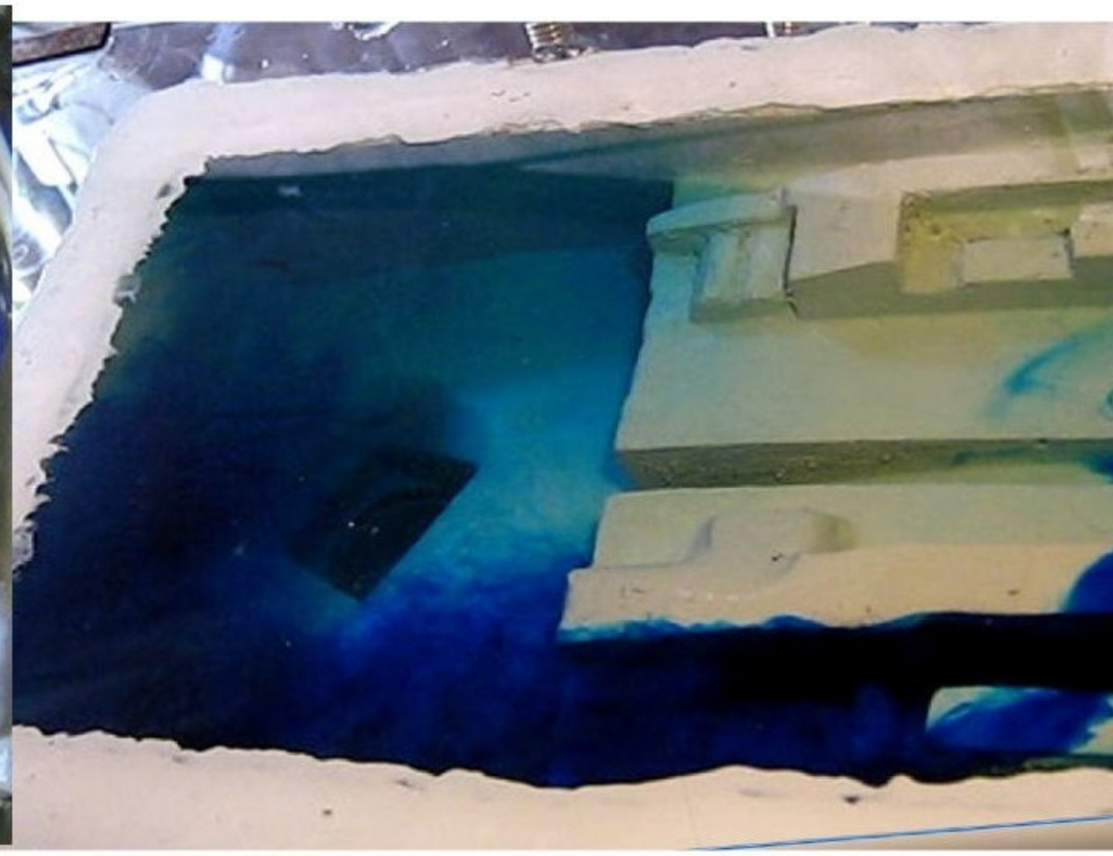

JOHN CADMAN JULY '02



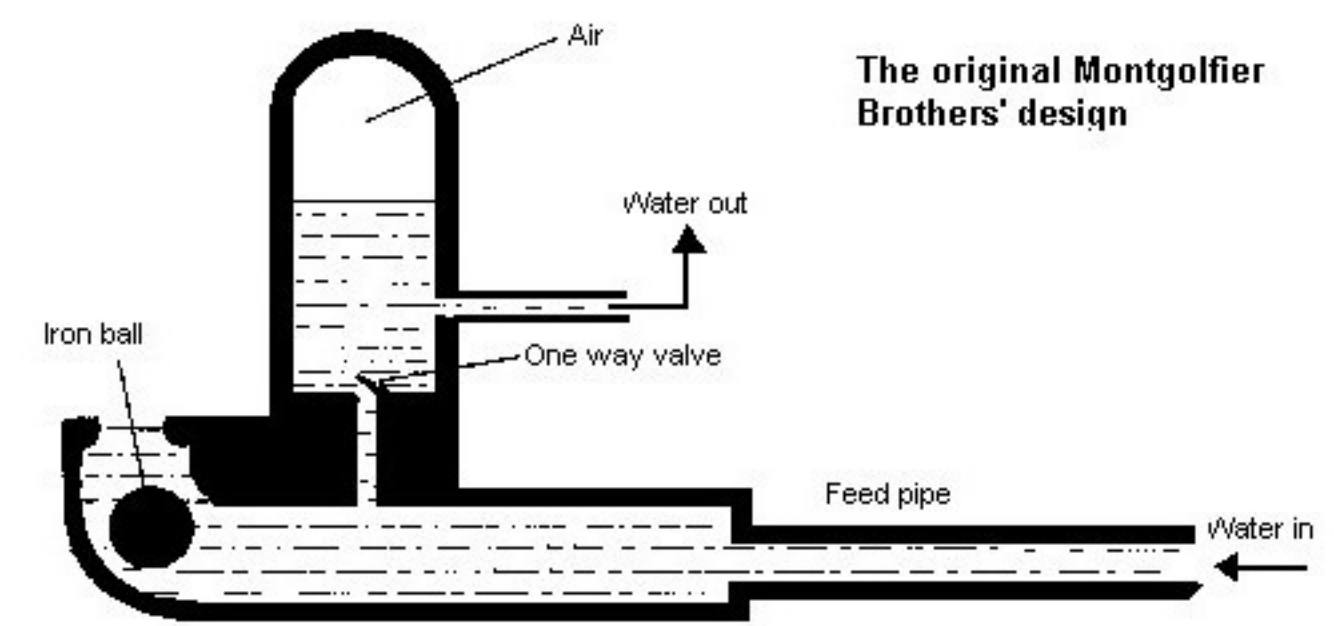
the spiral's arc is identical, no matter how large it grows. The *self-similar* structure of the Golden spiral gives it the

2D Golden spiral 3D Golden spiral (helix) Multi-3D Golden spirals

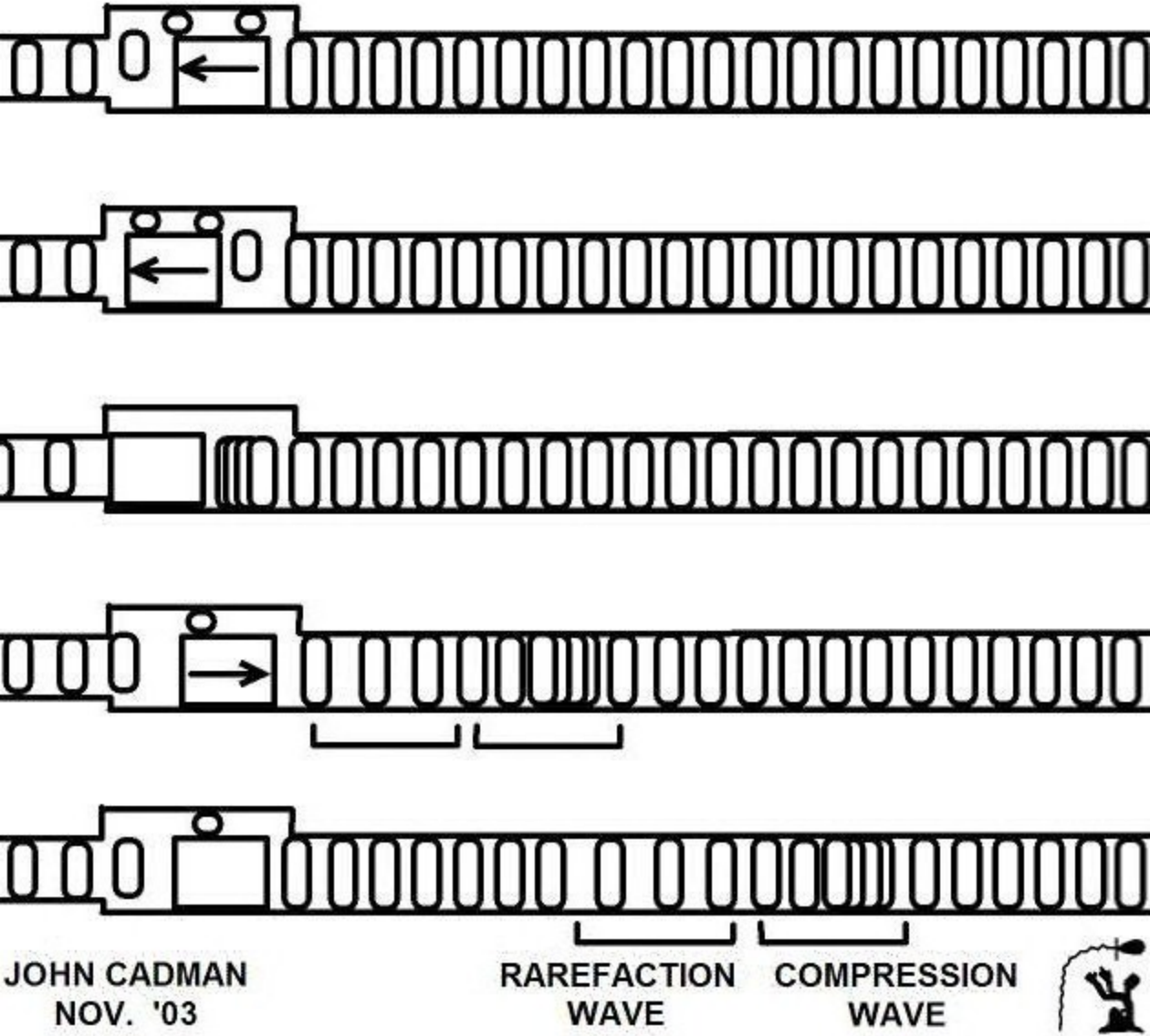
unique ability to remain perfectly balanced as it expands. For example, the Golden spiral is the shape of the chambered nautilus shell and the ram's horn.



Great Pyramid subterranean chamber's water vortex
Perfect vortex outputs through the "pit"
~~ Fibonacci Spiral ~~
John Cadman ~~ March 29, 2012

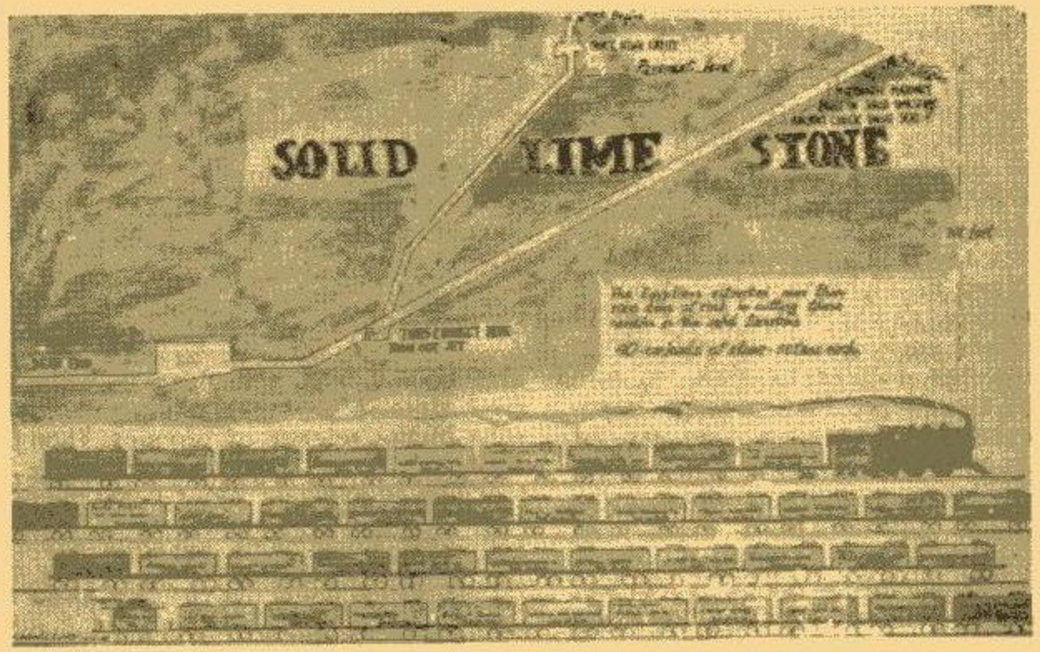

Air
The original Montgolfier Brothers' design
Water out
Iron ball
One way valve
Feed pipe
Water in

FLUID MOTION IN WASTEGATE LINE



JOHN CADMAN
NOV. '03

THE EGYPTIANS GO UNDERGROUND



The above drawing is a tracing of Perring's drawing (1836) of the subterranean excavation beneath the Pyramid. As to the height of the solid limestone, Perring may be in error. — Personal observations, and oral information indicate that it may be more than 60 feet higher, than Perring shows here. — But, until this observation can be verified, and accurately measured; idle speculation is useless.

water pump. This subterranean cutting formed the lower part of it, while the "core" made of ponderous masonry, formed the upper part. Thus; half of the pump is above the ground, and half below it.

The drawing of the interior of the Great Pyramid, shows that the engineers designed and built this monsterous pump, to take advantage of two diagonal water columns, set in motion, by creating a vacuum and releasing it. One diagonal is below the ground, and the other above the ground.

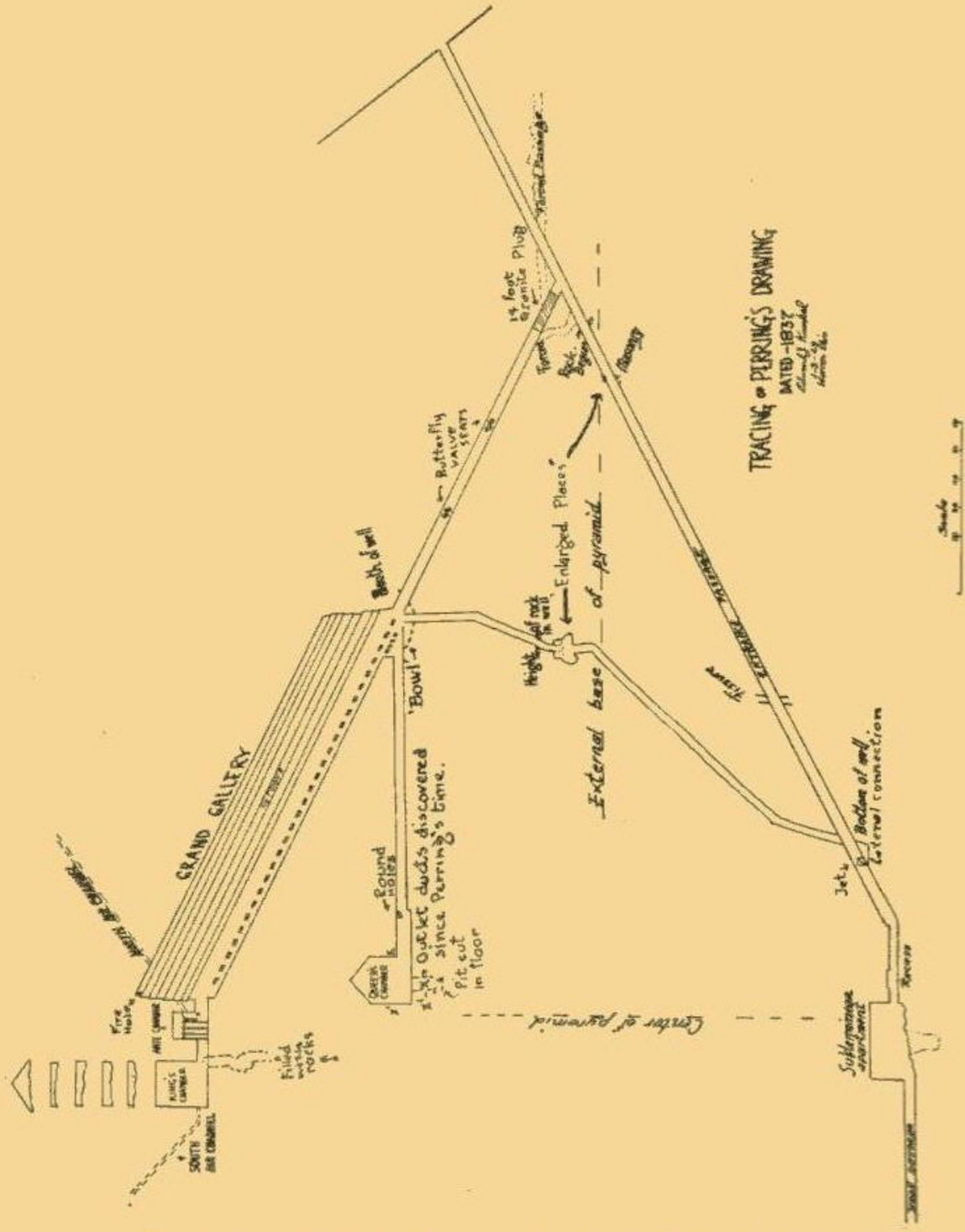
The lower one is cut in solid limestone, with a large chamber at the bottom, while the upper diagonal is made of ponderous masonry. It is designed to withstand atmospheric pressure if a vacuum is created in it, by the means of a fire.

Both the King and Queen's chambers are component parts of this pump. Both are designed to withstand pressure from within.

The lower diagonal feeds water into the pump, while the upper one discharges it. The two diagonals are connected by a shaft cut in the solid limestone. The upper end of this shaft ends in a huge enclosed bowl-like formation cutting in the solid limestone, while the lower end joins the lower diagonal with a unique jet. — A jet-bowl shaft or tube would be a good name for this element.

This subterranean cutting was a tremendous task. It required the evcavation of more than 2,000 tons of rock. The size of these subterranean shafts are of such proportions, that only one man can chisel at the rock face at one time.

Add to this; a constant temperature of 78 degrees Fahrenheit, together with a working space where ventilation is almost zero, and lime dust permeates the air, and a burning miner's torch consumes the life-giving oxygen: the sum total of these conditions are about as undesirable as one could imagine. — A 2,000 ton rock pile assumes nightmarish proportions.



— Perring made at least three drawings of the interior. All vary in detail. The above is a composite of drawings made over a period of two years, from 1837 to 1839.

In one the "firing hole" is not shown. In another the "masonry" on the lower diagonal is not shown, or mentioned, neither are the eight inch round holes shown, or mentioned; howevere Maspero shows drawings of them.

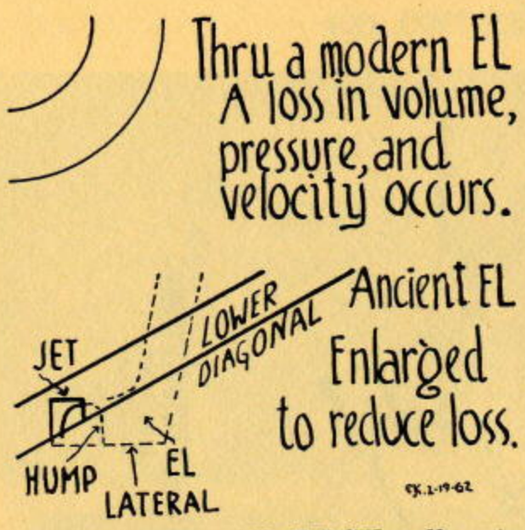
The part marked "bowl" varies in detail. Nothing is said or shown of the eight inch round holes, in the long horizontal passage leading to the Queen's Chamber; however Encly. Britt. 9th Ed. says they exist.

There is a variation of the drawing of the area marked "enlarged place".

One drawing omits the well, shown at bottom of the drawing; however another shows its contours in detail.

The vents leading from the "Queen's Chamber" are not shown here. They were discovered since Perring's time.

KUNKEL PROPOSES TWO SEPARATE PUMPS. THE FIRST PUMP IS A HYDRAULIC RAM PUMP. THIS RAM PUMP WOULD HAVE BEEN UTILIZED UNTIL THE KING'S CHAMBER WAS BUILT. THE OTHER PUMP IS A VACUUM PUMP. IT'S PRIME MOVING FORCE IS A VACUUM CREATED AT TOP OF GRAND GALLERY. KUNKEL BUILT AND PATENTED THE VACUUM PUMP. I CORRECTED AND BUILT THE RAM PUMP.



2,000 TONS OF ROCK, all cut by hand; every pound of it carried or hoisted out of the cuttings by manual labor adds up to an awful job.

2,000 TONS OF ROCK will fill 40 freight cars of 50 tons capacity.

It was a Herculean task; executed thousands of years before the invention of pneumatic drills, jackhammers, and dynamite. — 'Ten years were spent in preparation,' writes Herodotus.

Something more about these shafts. There are two of them. One is a rectangular symetrical diagonal, while the other is about 30 inches square with rounded corners, and follows an irregular course downward.

From ground level, the mouths of these shafts are about 160 feet apart, but as they descend they come closer together and meet at a depth of 89 feet; the result is the formation of a bastard U tube.

The junction can be defined as a lateral connection. The lateral is short, and in a horizontal position. At one end of it is an ENLARGED ELL, while; at the other end, where it joins the diagonal, is a nozzle or jet formation.

It can truly be called a jet because the apeture is smaller in cross-section than the lateral. In fact, it is about one-third smaller. — It constricts the flow through the lateral, therefore, water attains a higher velocity than water flowing through the lateral. — It squirts, like a nozzle.

The dual function of this spiral hump is new to modern engineers. A downflow through it makes water spin counter-clockwise. It acts as a shut-off when the flow is reversed.

The function of this hump is a hydraulic goodie.

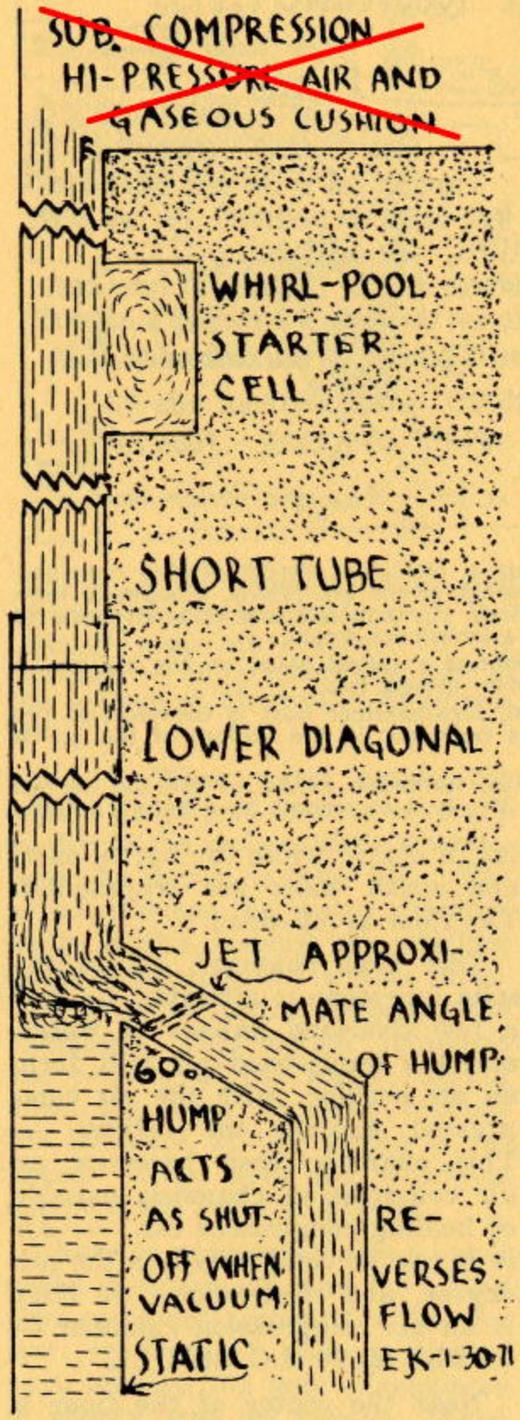
The lateral enters the lower diagonal, at an acute angle of 30 degrees. Its mean length is 6¾ feet long. Eight feet long on one ceiling appears to be arched, the walls verticle, and the floor flat, side and 5½ feet on the other. The but the junction of the walls and floor is rounded.

Constriction of the jet is formed by its odd connection with the lower diagonal. The opening is reduced by the triangular member marked "LOWER DIAGONAL".

It is unique as a jet; because it lacks a certain symmetry. It measures 3 feet across the top. One side is also 3 feet high, while the other is 4 feet high. The bottom is 3 feet, 4 inches, and conforms to the pitch of the diagonal.

The jet has another odd mechanical feature, or element.

Within the jet, a spiral hump is found. It is carved in the living rock. This hump emerges from one wall near the bottom, arches up over the top, and disappears in the opposite wall. Water flowing down the lateral connection and through the jet, will start to spin or twist in a counter clockwise direction.



Water cannot flow in two directions at the same time, in the same pipe. Therefore; more than 80 tons of water, remain motionless, in the lower diagonal, when water is drawn up through the jet by a vacuum.

After experimenting with a model of this ancient pump, I have come to the conclusion, that this spiral hump, had a dual function; quite unique in the field of hydraulic engineering. Briefly, the function was this; it acts as a shut-off means in the lower diagonal, when the flow is reversed by the creation of a vacuum. Such a flow keeps the water in the lower diagonal, in a static state. It keeps 85 tons of water motionless. The reason it acts as a shut-off, is the fact that water cannot flow in two directions in the same pipe at the same time.

The angle of junction of the lateral is 60°. The spiral hump about 30°. So, the reversed flow must make a 90° turn, when it leaves the compression chamber, and enters the lateral. Thus, the pressure in the compression chamber is lowered, while 85 tons of water in the lower diagonal remains motionless.

As this cycle nears its final phase, and at last stops, the static column begins to move, all hell breaks loose; because the shut-off means has been holding back some 85 tons of water, while at the same time the pressure in the compression was being reduced; thus, offering very little resistance to the moving column in the lower diagonal.

What man can calculate the gaseous cushion pressure per square inch in the compression chamber, when 85 tons of moving water is doing the compressing? Then add to this, the resistance to flow has been reduced.

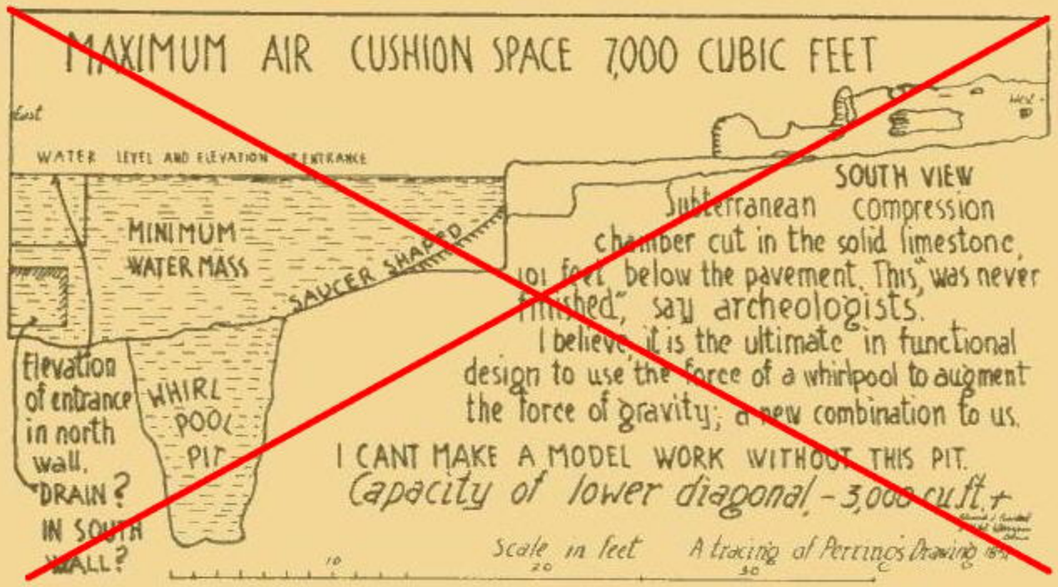
Some observers write, that the rectangular symmetrical diagonal shaft is wider than high, while other say the opposite, but all agree that it is 3 feet 5½ inches, by 3 feet 11½ inches. Perring shows it higher than wide. Perring is correct. EB9 - PTR - OAG

This section is 220 feet long; and descends at an angle of 26 degrees, 41 minutes. — So perfect is its alignment; that one can sit at the bottom and see the sky. — And being rectangular in form, the friction of flow is reduced to a minimum.

"Liquids and gases flow freer, that is; with less friction through a square tube, than that of any other shape." OICT OK

If this tube were filled with water, it would hold 88 tons. The static pressure at the base would be about 40 pounds per square inch; because its depth is 100 feet. OK

WORKS AS A SHUTOFF BECAUSE THE REVERSE FLOW IN THE DESCENDING PASSAGE CLOSES THE UPPER CHECK VALVE. WHEN PRESSURE OF WATER IN DESCENDING PASSAGE EQUALS PRESSURE OF WATER FROM SUB CHAMBER THEN BOTH WILL FLOW UP THE WELL SHAFT BECAUSE OF VACUUM ASIST. THIS ONLY APPLIES FOR VACUUM PUMP



During the winter of 52, and 53, I made a plexiglass model of this chamber; scaled ½ inch to a foot, using Perring's drawings of the pit. Slowly, I began to form a raised right hand spiral screw like formation. It made two and one-half turns to the bottom. — I concluded it was to induce a whirl-pool action.

Following the drawings still further, I formed a raised place on the bottom. It resembled the raised place, found in a common mixing cup.

I observed here that distruction rampant, Jack-hammer dust is everywhere. The raised place is gone. A 3 x 6 foot hole has been cut in the bottom of the pit. It looks like a grave, yet to be filled.

Only about 4 feet of this raised screw-like formation exists; at the top nearest the entrance. The angle of descent is about 30°. It is as smooth as a baby's bottom.

This rectangular, precision-cut shaft is the supply tube for the pump. — It is where the water comes in. It is the intake.

Henceforth, this shaft will be called the LOWER DIAGONAL.

The diagonal shaft ends, 23 feet below the jet. The end of the diagonal is joined by a rectangular shaft, smaller in cross-sectional area than the diagonal, and cut in a horizontal position. (I'll call it the short tube.)

This short tube leads to a huge rectangular chamber with the entrance in the precise northeast corner of the chamber.

This chamber is 100 feet below the pavement of the pyramid. It is 46 feet long, 27 feet wide, 5½ feet high at the west end, while at the east end, the height varies from 11 to 13 feet.

The floor slopes downward from west to east. Water in it will drain toward the entrance.

The ceiling is truely rectangular in shape, while the north, east, and south walls are trapezoidal. The floor is lop-sided.

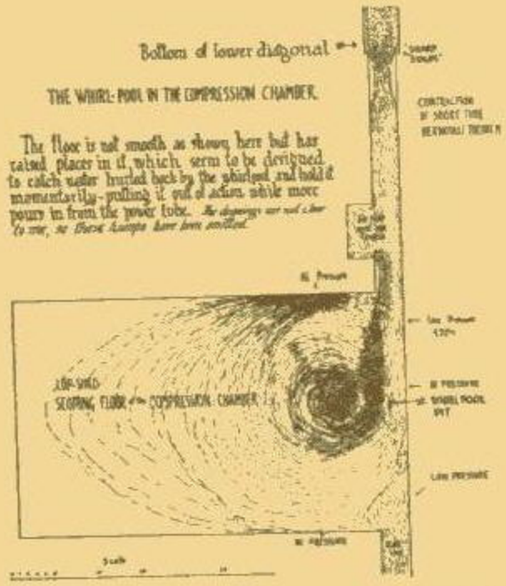
This huge chamber, cut in the solid limestone is airtight. — Add a few thousand gallons of water, and the imprisoned air will form an air cushion, with the air compressed against the ceiling. — This chamber then becomes, an air compression chamber, capable of holding compressed air. — Air in it can be compressed to the nth degree, and then some. — Here is an air compression chamber — EARLY 2,000 B.C. MODEL.

Near the center of the floor is a dished-out, saucer-like cutting, about 20 feet in diameter. (I'll call it the saucer.) Near the middle of the saucer is a pit, 7 feet in diameter, and 9 feet deep; fashioned like a malformed tumbler, or cup.

If a mechanical means can be devised, whereby water in the lower diagonal can be caused to move, water will enter this chamber at an extremely high velocity.

OK

DRAIN TO THE PIT



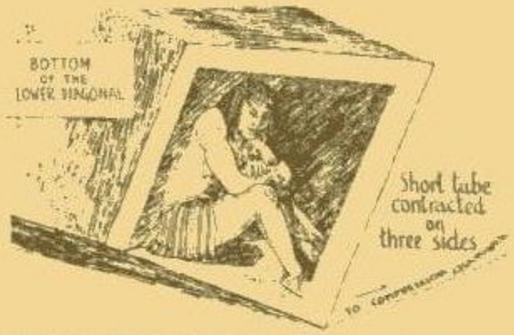
It is quite obvious, that this whirl-pool action develops an extremely high air pressure in the chamber — It is something new in the science of Hydraulic Engineering.

When water enters the orifice its current sets up a rotary motion in the saucer, while a whirlpool developes in the pit. The action reduces the water pressure at the orifice, because the whirling water is rotating in the same direction as the stream entering the chamber. This action increases the velocity of the water flowing down the lower diagonal, because the pressure at the orifice is reduced. Thus, does the whirlpool augment the force of gravity.

I have experimented with a small model of this pump, and for a long time could not account for the violent reaction of this particular part, because the only expenditure of energy, was my breath. When I blew down the jet-bowl tube, I got a discharge of about half gallon of water, and some of it travelled a distance of 22 feet. It was some time before I realized that a whirlpool which I could not see, had developed in the well, and was at work, and particularly responsible for this violent action.

WAS WATER STATIC IN SUB CHAMBER AND LOWER DIAGONAL??

JET BOWL TUBE = WELL SHAFT



CONTRACTION OF THE *LOWER DIAGONAL*

For some strange reason, this has survived the way the Egyptians left it. A copy of a photo with a change of costume.

Bernoulli found that a flow through such a contraction as shown above is increased, because the friction of flow is less and the moving mass greater.

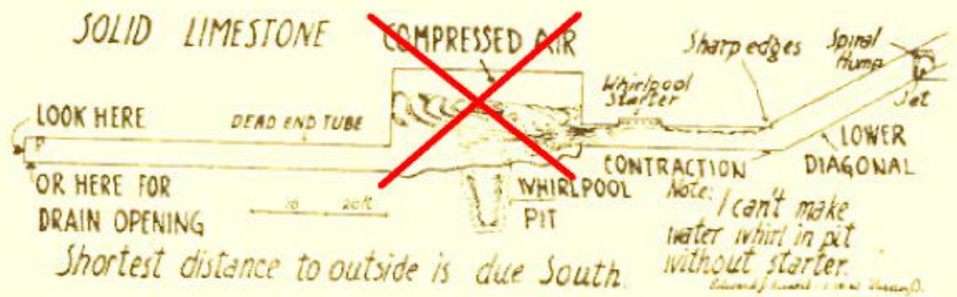
In other words, the flow through the contraction is greater than if, the contraction were of the same cross-section throughout.

I made another model without the well and it did not work at all. — I was quite sure that I had rediscovered a new force; a whirlpool in an airtight tank, to do work.

The horizontal connection which joins the lower diagonal with its compression chamber is, 27 feet long, 3 feet high, and 2 feet 9 inches wide. It is 5.7 square feet smaller in cross section, than the diagonal. — The junction of the tubes is abrupt. — The top and sides of the diagonal are cut at right angles to its pitch, and form three distinct edges. — In short, this junction forms a contraction of the diagonal.

Bernoulli discovered, that if an orifice of a tube had clean sharp edges, and the tube was no longer than three times its cross-section dimension, that the discharge from such a tube will be increased by more than 25%. This is known as the principle of the standard short tube. The horizontal connection which joins the lower diagonal with its compression chamber is nearly square in cross-section, and its length is almost precisely 9 times this dimension. This variance of proportion may be accounted for,

These two pages are the only ones that explore the subject of the first pump - the "CONSTRUCTION PUMP"
If Kunkel is right about the construction technique then the "Construction Pump" would be required until construction was above the King's Chamber. A working model of this pump was never successfully built until my model ran (4/3/2000).



by the fact that the ancients were working with a hundred foot head of water. The clean sharp edges form three sides of the junction where the horizontal and the lower diagonal meet, although some of its clean sharp edges have taken a terrific beating from souvenir hunters.

While Bernoulli's Theorem calls for a tube 3 times longer than its diameter, here is an application where it is more than 9 times longer. This variance of proportion may be accounted for, by the fact; that the ancients were working with a one hundred foot head of water, and a volume of 80 tons, plus. —Too, I suspect that the increased discharge exceeded the accepted maximum of 33%. This would seem to indicate that the ancient hydraulic engineers knew more about Bernoulli's Theorem, than Bernoulli did; because this short tube is 27 feet long.

One thing more about this tube. — Seventeen feet beyond the clean sharp edges is a cube-like cell. It is six feet square on plan, and 4½ feet high.

I deduced that the cell is the whirlpool starter; and that its function was to overcome the inertia of mass in the compression chamber and start the whirlpool spinning.

It worked this way: air trapped at its tiny ceiling formed an air cushion, and the instant a downward flow occurred, the air pressure in the cell became unbelievably high, and seeking relief moved the water between the cell and the chamber, and thus; initiated the action, which a moment later developed into a whirlpool. — A model worked better WITH this cell than without it.

Since, the subject of the moment, is the function of the underground cuttings, it is appropriate at this time, to mention a mechanical element, which apparently has no function, although it may have a function; which is elusive at present.

The mechanical element? — A dead end shaft, cut in the south-eastern corner of the compression chamber.

It is 52 feet 9 inches long, 2 feet 7 inches wide, and 2 feet, 5 inches high.

Its direction is from true north to south.

Its position is horizontal.

It lies at the lowest corner of the chamber.

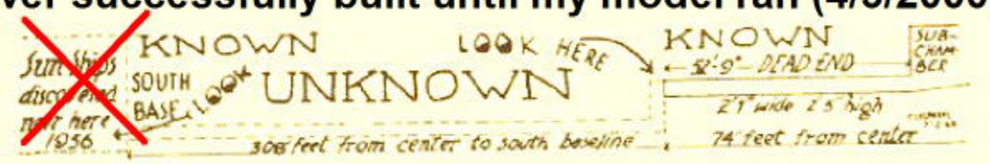
Its position suggests, that it could be a drain; but it dead ends in the rock. Even though it is 105 feet below the base of the building; it is still high enough from the outside to function as a drain.

Apparently this dead end has never been examined; with the idea in mind, that it may be a drain duct.

In 1954, two sun ships were discovered in a rock hewn cavity at the very southern base of the Pyramid.

It is reasonable to assume that the size and shape of this cavity has been surveyed and recorded. But, such data is hard to come by; at least for me.

It would be interesting to examine the north wall, and ascertain the distance from it to the terminus of the dead end.



The terminus of the dead end is about 83 feet south of dead center of the building. This leaves a space of about 300 feet to its southern base.

No connection to Sun Ship pit: pit not deep enough

In short, I believe there exists a connecting duct, between the dead end, and the sun ship cavity.

Explorers might hit pay-dirt; if they take a good hard look, at the end of the dead end, and the north wall of the sun ships crypt.

OK

The cutting of this shaft must have been an awful job. — It is so small. . . . It is only 29 inches high, and 31 inches wide. — There is very little elbow room. — Maybe a midget crew cut it.

I'll never believe, the dead end had no function.

I'll never believe, that its existence is due to over-sight, or gross error. — I'll never shrug it off, as a miscalculation. I have too much respect for the ancient engineers for that.

Why all the fuss and todo about a hypothetical water duct? If such a duct were discovered; what possible mechanical significance could be interpretated from it?

NOT DRAIN: HI PRESSURE OUTPUT

The answer lies in this simple fact; a waste duct in this particular area, would be definite proof that the engineers had cut a simple water ram in the solid rock.

WAY-OFF ON PUMP vs WASTE RATIO

A simple water ram of monstrous proportions.

A ram, which pumps far more water than it wastes.

My guestimate? — At least 40 tons for one ton of wastage to a height of 60 feet; during a time cycle of one minute.

0.4:1 not 40:1

Another question; What if no waste mechanism were found in the duct?

NO

Answer; the sun ship cavity itself may be part of it.

My line of reasoning follows this pattern. Primarily the cavity was cut for use. After it was no longer needed, the sun ships were installed. Why not decorate it, to touch it up a bit, with some regal trappings?

What if no duct were found at all? — I'd say they overlooked a good bet. — My alibi in this case; they learned they didn't need it; which after all does not make a bit of sense.

I have believed from the very first, that this tube is part of a drain, and that its outlet is sealed, in just as clever a fashion as the ancients managed to conceal other openings. It is utterly fantastic to believe, that the ancient engineers overlooked this common device; a drain that can be opened and closed at will, and thus; employ the same mechanics of the common ram. opens & closes automatically

Construction pump

During the early stages of construction, the use of a controlled drain would eliminate the need of a fire, to create a vacuum. —**PUMP #1**

Ratio wrong

Simple ratios indicate, a negligible amount of waste water to the amount pumped; whereas the modern ram wastes more than it pumps.

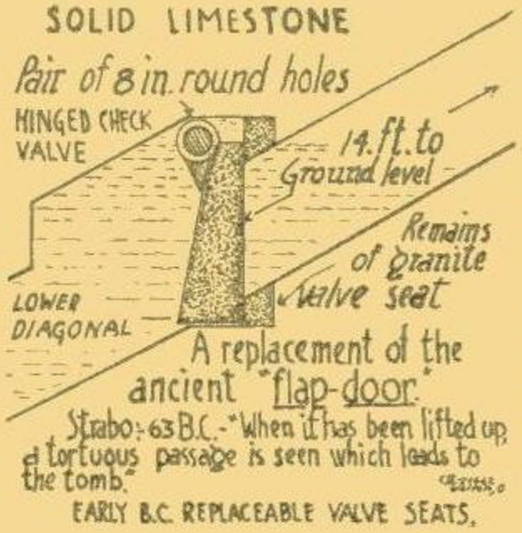
NO baffles

I predict, that one or more baffle walls will be found in the tube, the function of which; is to slow down the high velocity of discharge, and ease the shock exerted on the waste valve.

What will the drain valve look like? — It will be a "door with pivots." We call them butter-fly valves. They are easy to open and close, and are operated by a handle. Pairs of holes with proper seats to fit this type of valve are found in the tube, leading to the upper diagonal. — And none, for a moment doubt, that these seats and holes are for this type of, "door."

WRONG TYPE & QUANTITY OF VALVES:
CHECK VALVE IN DEAD END SHAFT;
WASTE VALVE IN SHAFT FROM PIT TO NILE

BUTTERFLY VALVE DOESN'T ALLOW FOR AUTOMATIC OPERATION



(EB9) tells of 8 inch round holes here. Maspero's drawings show them. Perring's drawings show masonry here. — Holes have been plastered over; masonry has been removed, and the whole area covered with dark red gloss paint.

A short distance down in the solid rock of the lower diagonal, is a tiny offset, "wherein," says Petrie, "hung a door that swung inward." A pair of eight inch round holes are found here, one in the east wall and the other in the west wall. Adjacent to these round holes, is granite masonry. Giving this mechanical element an interpretation in hydraulics, is, check-valve. The holes support a round shaft, and the granite masonry is the valve seat

Any engineer knows, that up to this point, there are two glaring mechanical omissions; one is a means for replacing compressed air, while the other is the absence of a clack-valve.

Recall the spiral hump in the jet? Its design causes water flowing through the jet to twist, or turn, in a counter-clockwise direction, especially the water in the column back of the hump.

A downward flow causes the water in the shaft with the rounded corners to stick to its sides; which in turn develops a tiny tornado in its vortex. The tiny tornado also moves downward.

In March of 69, we got a close-up of this sun ship cavity. We could not see the bottom. It was pitch dark. Our guide said it was about 18 metersdeep. I asked him, if there was a drain shaft to the outside. He said, "No drain."

I had in mind a Japanese water ram, wherein; the waste valve was submerged in order to reduce water-hammer.

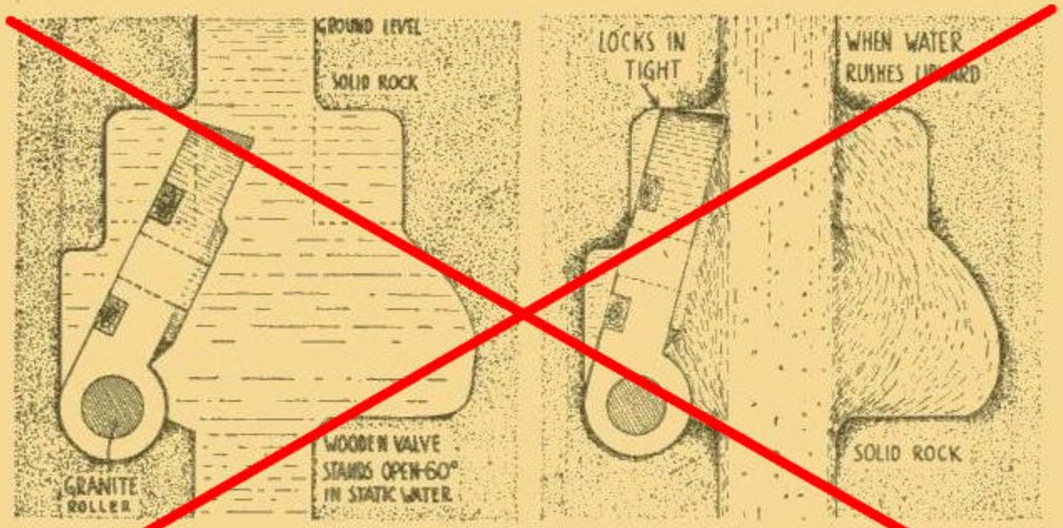
Our guide said, the government planned to convert this cavity into a snack bar with rest rooms. I asked him, how did the government plan to eliminate the sewerage. He shrugged his shoulders.

It may be within the realm of mechanical possibility that if water is 5 or 6 feet higher at the mouth of the lower diagonal, then this cavity, with proper mechanical elements, may have functioned as a waste means. To speculate further, when so much is unknown, is leading with the chin.

Thus; with the installation of a simple check valve, a clack valve with a hole in it, and a waste valve; it is possible to make a complete ram in the rock hewn cavities beneath the Pyramid. A ram of such gargantuan proportions; that was way beyond the scope of that firey imaginative genius, Jules Verne.

In the jet-bowl tube at ground level, is an enlarged cavity. It is as large as an average bedroom. It is eleven feet across at the bottom, and close to seven high. It is cut in the living rock. The northern profile is curved, while the southern profile is vertical. The bottom of this cavity is flat, in a horizontal plane.

Here is an odd fact about its location. When the mouth of the lower diagonal is covered with water to a depth of a foot or so, at ground level, water, seeking its level, will rise to the top of this cavity. This precise location suggests the use of a bouyant valve. A bouyant valve will stay open when the water in this cavity is at rest, but close the instant water flows down through it. It will slam shut and create a water-hammer.



Perring shows two variations of this cavity. Both are curved on the north side. But the curves are not quite the same. The one shown above seems to make the most mechanical sense.

The construction of this cavity seems to point out, that it was hinged on the south side, and the bouyant valve itself, swung to a closing position in an arc which paralled the arc of the chamber on the north side, and seated on the bottom of the chamber.

If you can imagine a wooden platform attached to a granite lawn roller in such a fashion as to be level with the top of the roller, you can form an accurate image of a mechanical member that will function in this cavity. — To make it fit properly, the platform must be rounded like a headstone on the end opposite the roller.

The platform can move up and down, because it is hinged to the roller. When this unit is submerged in water, the platform assumes a nearly vertical position, and the roller serves as an anchor, because the platform does not have sufficient buoyancy to float it.

This device will function properly in this chamber, and can be assembled in it. All the elements that compose it, must be smaller in one dimension than the tube leading to it, otherwise; the separate parts cannot be lowered into the chamber.

The platform is held together by cross-beams, about the size of railroad ties. And slots are cut crosswise in the platform to accomodate the cross-beams. The fit is snug when dry.

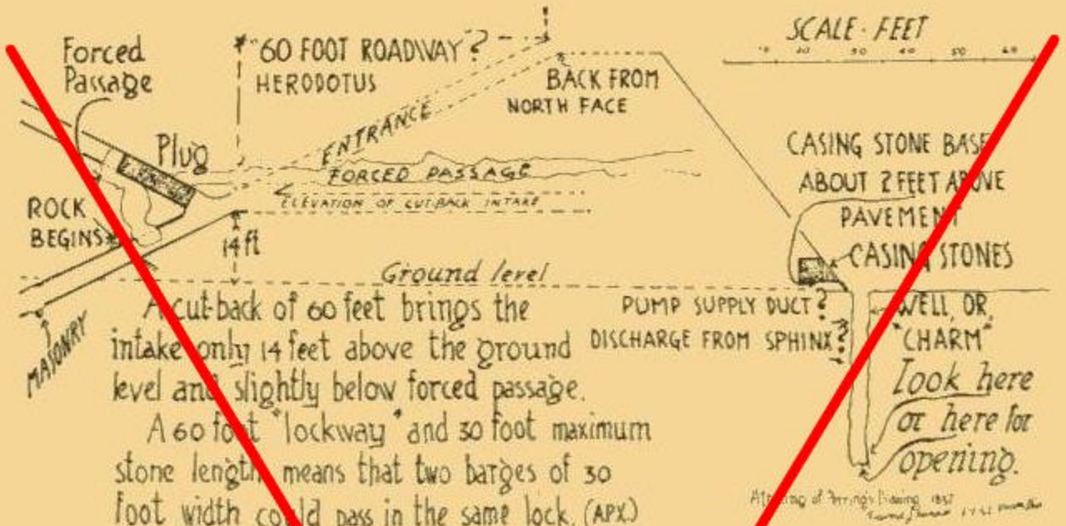
After a few hours immersion in water, the dry wood swells and makes the whole assembly unbelievably tight.

The hinged platform will lock itself in the chamber in an open position, when water rushes up through it; and slam shut when the water flows down, and float in a nearly open position when the water is at rest.

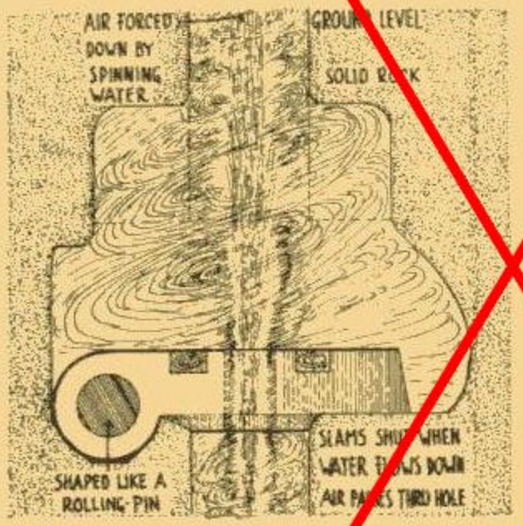
An integral part of the platform is a segmented cone on its bottom; which serves as a valve guide. It insures proper and firm seating when the valve slams shut.

The roller must be less than 30 inches in diameter. — Tube size is 30 inches. — Platform about 18 inches thick.

As the reconstructed valve now stands, no air can pass through it when it is closed, and there is danger of it remaining in a closed position at times. But, if a round hole is cut in the valve, say near the center, air can pass down through it, even though it is closed, and the danger of it being stuck in



It is logical to assume that FORCED PASSAGE was the intake during major construction; ENTRANCE was added in the finishing process.



sion chamber is indelible evidence, that the ancient hydraulic engineers possessed a profound knowledge of natural phenomina, and used it to pump water. — The formation of this cutting is not accidental. — It was deliberately planned and executed with the utmost care. — Although void of masonry, or decoration does not imply that it was never completed. — It is as complete, as it need be. — I believe it is the ultimate achievement in harnessing natural forces.

Serious hydraulic experiments began in the mid-forties. From the time of the first successful experiment, I was plagued with one baffling problem which to this day, still plagues me. It has been a fly in my ointment, and a thorn in my side.

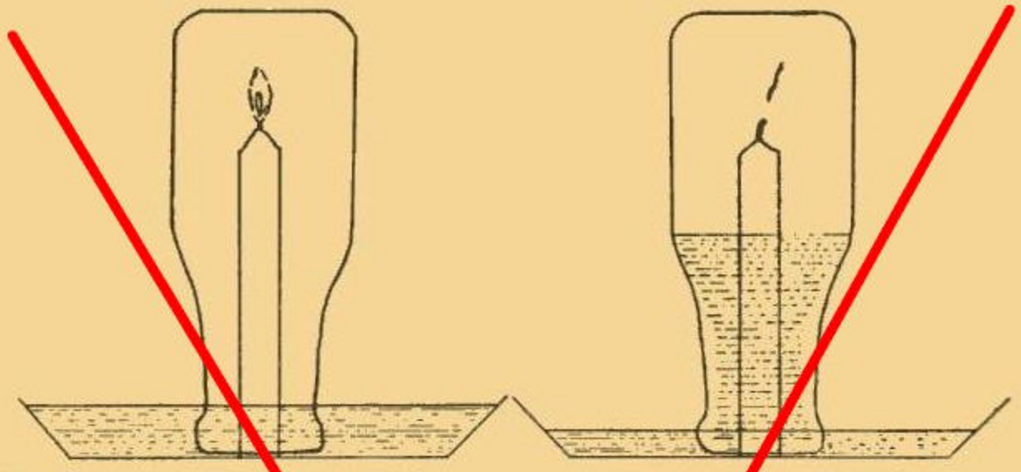
The problem?---How could the ancient engineers develop an inert gaseous cushion in the subterranean chamber that would withstand the terrific water pressure that it was subjected to?

a closed position, is eliminated. This hole also cushions the closing shock, and reduces violent water-hammer, which otherwise might shatter the sturdiest of valves.

This combination of forces is something new to modern science; newer than tomorrow and yet as old as the pyramids. While Man has used the force of gravity from early Roman times, he has yet to learn how to combine it with the rotary action of a whirlpool in an airtight chamber, to augment the force of gravity; plus the refinement of the Bernoulli Theorem.

This seemingly meaningless cutting; this cavernous air compres-

PRIME MOVER



The reaction from the candle flame is slow, because parafin is the produc of fossil fuel. Fossil fuels give off carbon monoxide, which is "very slightl soluble in water." But newsprint which is made of wood pulp when burne gives of carbon dioxide which is soluble in water the reaction is vigorou and fast. Try it in a wide mouthed glass milk jug.

To better understand the mechanics of this great pump, and what makes it go, we should perform a simple experiment. — Fill a pie pan full of water, get a milk bottle and a strip of paper. Now, light the paper, thrust it into the bottle, turn the bottle upside down, and set it in the water. The fire forms a vacuum in the bottle, and the water rises up in it. Now if air is let into the bottle, the water will drop back again into the pan.

The fire forms the vacuum in the bottle; because it consumes the oxygen. It goes out when the oxygen is used up. — The fire also gives off carbon monoxide; which readily forms carbon dioxide. This invisible gas, is heavier than air. For this reason it lies like a blanket on the surface of water. Also, carbon dioxide is soluble in water. Such a solution is slightly acid; and makes soda water.

It will be observed, that the instant the inverted bottle touches the water; a bubbling action occurs. This is caused by the heated air expanding; thus forcing some of the air out. — Conversely, the cooling of heated air in a sealed bottle will form a partial vacuum.

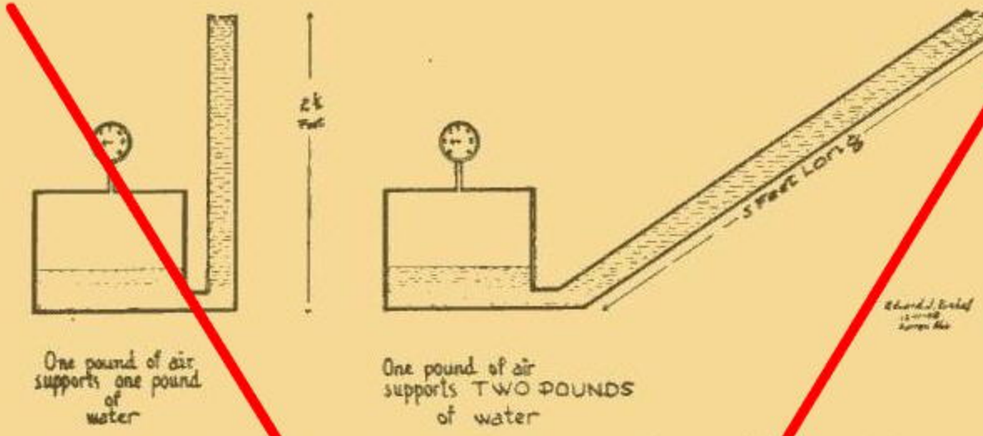
If the bottle remains undisturbed for a brief period, the water will continue to rise slightly. This is due to the fact; that carbon monoxide is being transformed to carbon dioxide; which is being dissolved in the water.

The creation of a vacuum by this means, involves three factors: the expansion and cooling of air; the consumption of oxygen; and the conversion of gases.

A fire burning in an airtight chamber in the pyramid, will cause this same action, MOVEMENT. It is MOTION that makes this pump work. Water is sucked up, and dropped. —Sucked up, and dropped. — Sucked up, and dropped — at will.

Pure air at sea level is composed of 78.06% nitrogen, 20.9% oxygen, and the remainder composed of rare gases. Air, at sea level has a solubility quotient of 0.020 Fahrenheit. - Oxygen 0.034. - Nitrogen 0.017. - Observe the solubility of the two gases. Oxygen is TWICE that of nitrogen.

There is a law in the physics of hydraulics that says; when a liquid is at rest, the pressure exerted on the bottom of a vessel is equal to its perpendicular height, regardless of the shape of the vessel.



Now, if we have an airtight tank and attach a diagonal tube to the side of it near the bottom, and fill the tube with water, we will trap the air in the tank and form an air cushion. The air will be compressed. When the water in the diagonal tube is at rest, the degree of air compression is equal to its perpendicular height. Thus, a certain air pressure will hold it up.

But, if the water in the diagonal tube moves down, the air cushion will not hold it up, because at the instant it moves, it becomes a mass in motion, and must be regarded as such, and the degree of air compression, is determined by the mass in the whole tube, together with its velocity.

The ancient Egyptian built a pump, which uses this principle in a compound way.

Let's explore this diagonal tube business and air pressure a little further. Let's say we multiply every dimension by two. — RESULT? — We have a tube 120 inches long, two inches square with a capacity of 480 cubic inches of water. But, the air cushion which holds it up is only two pounds.

Multiply by two again, we have a mass of 3840 cubic inches but only four pounds of air.

Observe the ratio of air cushion to mass as the size increases.

A. lbs. = Air pounds.
C. S. = Cross section: inches
T. L. = Tube length: inches
CU. C = Cubic capacity: inches

A. lbs.	C. S.	T. L.	CU. C
8	8x8 = 64	480	30,720
16	16x16 = 256	960	245,760
32	32x32 = 1024	1920	1,966,080

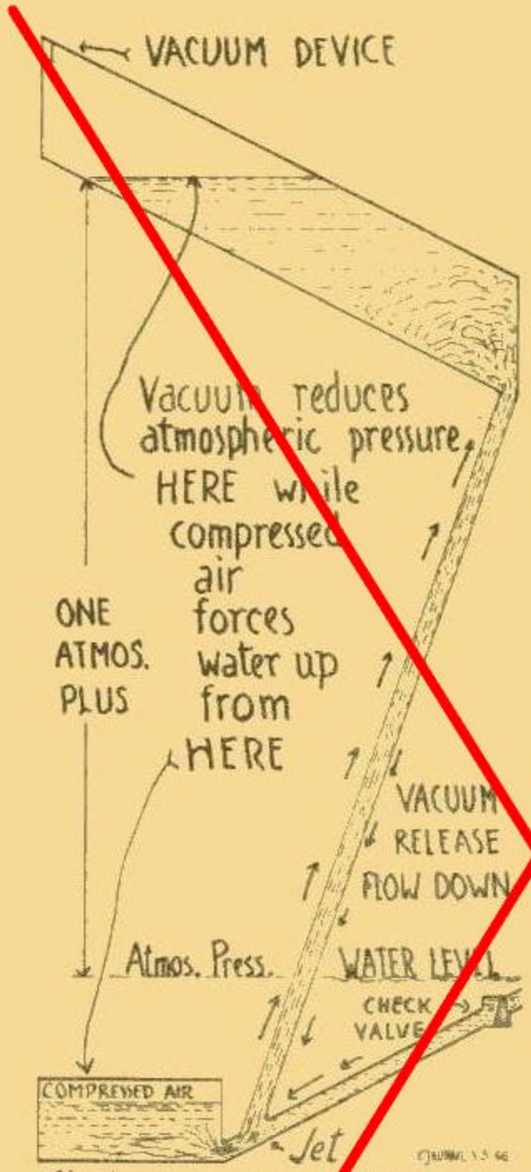
32 lbs. of air holds up 36 tons.

These figures point out, that; the slightest imbalance in atmospheric .pressure, or movement caused by other means would set a large diagonal tube in motion, or cause movement, and movement does the pumping.

Also, these figures seem to point out that; as size increases less energy is needed to create movement.

These figures also indicate, that a small laboratory apparatus will not work. However, a small laboratory apparatus in which mercury is used instead of water, might work. Mercury is more than 13 times heavier than water, and fluid friction is almost zero. Also such an apparatus, or model would eliminate the air cushion replacement factor, because, under room temperatures and pressures, it does not readily absorb oxygen, as does water.

Let's use two airtight tanks with diagonals attached to each one, and place one unit above the other. Let's connect the two diagonals by a third tube; with connections at the bottom of each diagonal. — The lower connection forms a jet, while the upper one a drain.



Check valve can't open during up-flow. Vacuum release causes down flow producing jet or injector action.

A vacuum takes atmospheric pressure off the top of highest water surface. The pressure from the sub. chamber forces it up, while the valve remains closed.

A release of the vacuum forces the water down. This up and down movement should not be confused with the action of a suction pump.

Phase 1. Water is drawn up to a short height.

Phase 2. Water flows down the lower diagonal tube, because air pressure in sub-chamber has been reduced.

Phase 3. Air pressure in sub-chamber is increased, because of increased water volume. Compressed air pushes water to higher level.

Phase 4. Vacuum applied again. Water reaches a higher level, while check valve remains closed. With a closed check valve, atmospheric pressure is eliminated as a functional force, as it is used in a suction pump.

Phase 5. Vacuum applied again. Water rises higher, because it is pushed up by compressed air in the sub-chamber; and the atmospheric pressure has been taken off the top surface.

This action is analogous to that of a ponderous piston, moving slowly up and down. During the upward movement, the water rises higher; while the downward movement creates a jet action; thus, forcing water into the sub-chamber.

As this piston-like action continues, the piston gets heavier and larger; while the air cushion space in the sub-chamber, becomes smaller due to higher air compression.

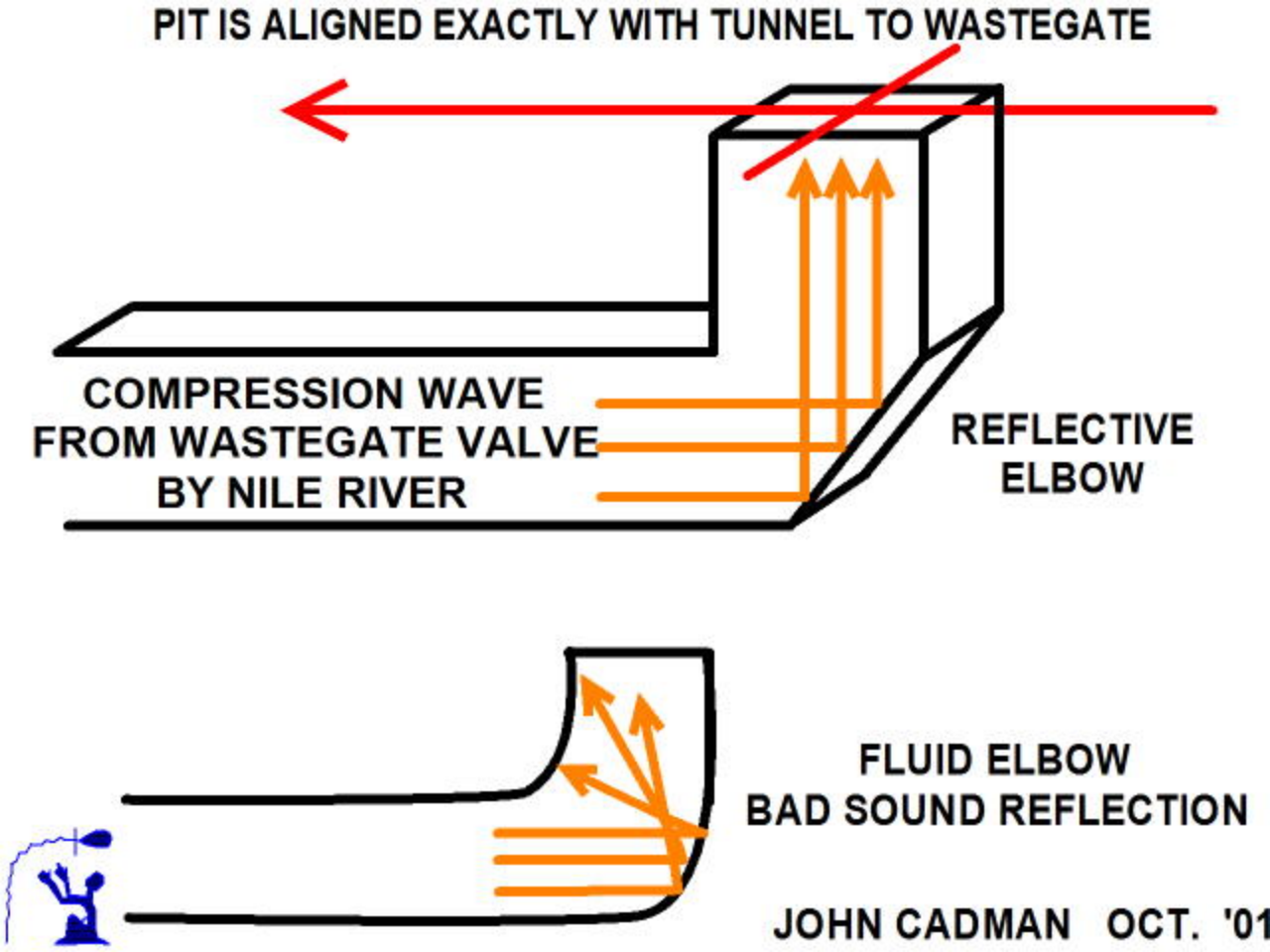
Let's put a hinged check-valve in each diagonal. In the lower one the valve is near the top; while in the upper one, the valve is at the bottom.

The third tube, the one which connects the two diagonals, should have a name. The name jet-bowl seems to be quite appropriate, because it has a jet on the bottom and a bowl on the top.

Let's make a slight enlargement in the jet-bowl tube, the form a chamber. — In this chamber, place a hinged wooden trap-door, which closes flat. — And position the chamber so that the trap-door floats open, when the lower diagonal is full of water.

Let's seal the open end, the top of the upper diagonal, but leave a small opening. — And, connect this opening to a vacuum device; a means through which air can be drawn, so that water can be sucked up and dropped.

As soon as water is sucked up in the upper diagonal, a downward flow occurs in the lower diagonal. — The air in the lower tank is compressed, and after it can be compressed no more, the flow stops. — The back pressure closes the check-valve; and the compressed air blows the water up through the jet into the upper diagonal.


PIT IS ALIGNED EXACTLY WITH TUNNEL TO WASTEGATE
COMPRESSION WAVE
FROM WASTEGATE VALVE
BY NILE RIVER
REFLECTIVE
ELBOW
FLUID ELBOW
BAD SOUND REFLECTION
JOHN CADMAN OCT. '01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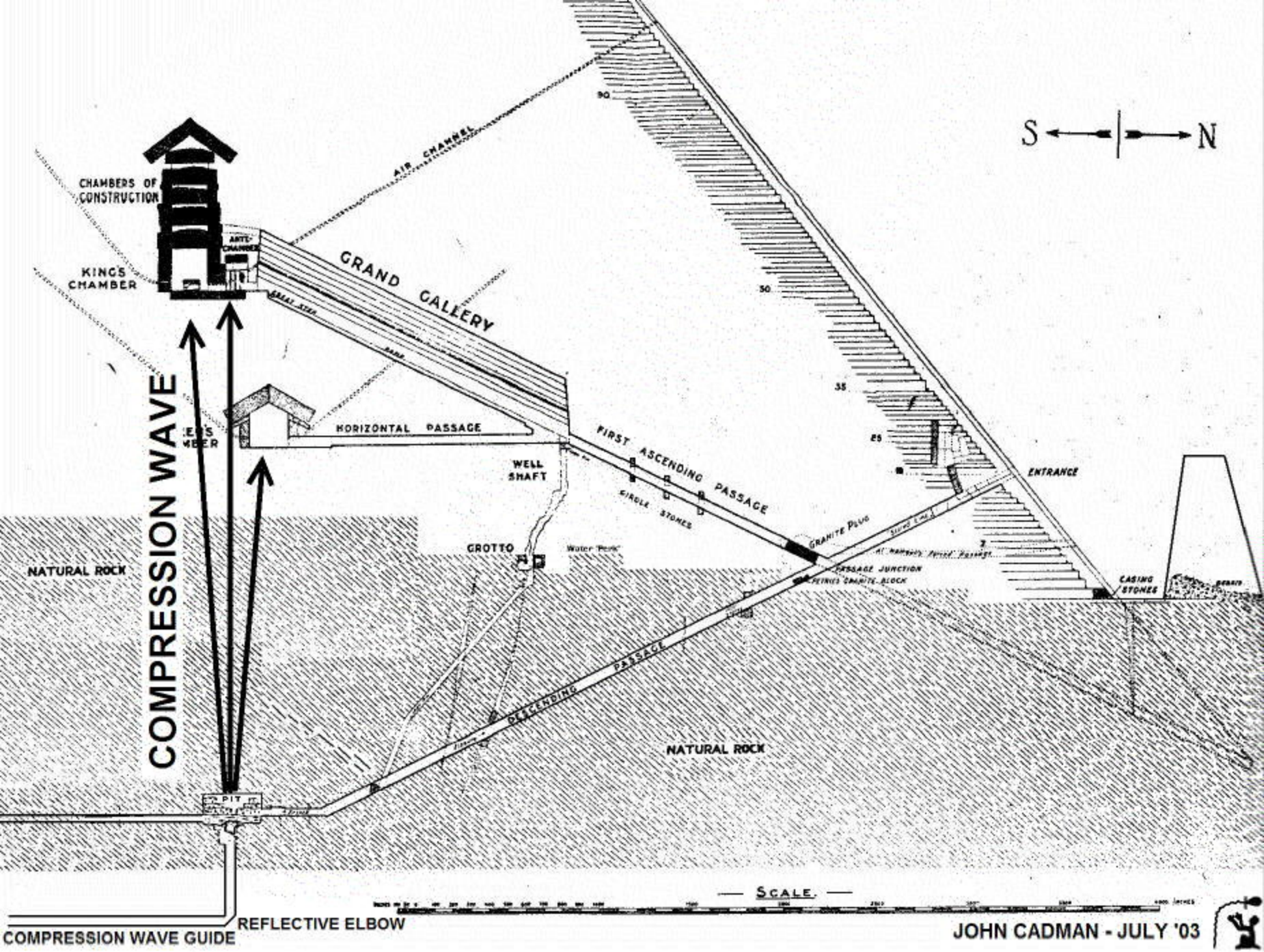
S
N
CHAMBERS OF CONSTRUCTION
KINGS CHAMBER
ANTE-CHAMBER
AIR CHANNEL
GRAND GALLERY
GREAT STEP
HORIZONTAL PASSAGE
WELL SHAFT
FIRST ASCENDING PASSAGE
GIRDLE STONES
GRANITE PLUG
ENTRANCE
CASING STONES
GROTTO
Water Well
PASSAGE JUNCTION
PETRIE'S GRANITE BLOCK
DESCENDING PASSAGE
NATURAL ROCK
NATURAL ROCK
PIT
COMPRESSION WAVE
SCALE
COMPRESSION WAVE GUIDE
REFLECTIVE ELBOW
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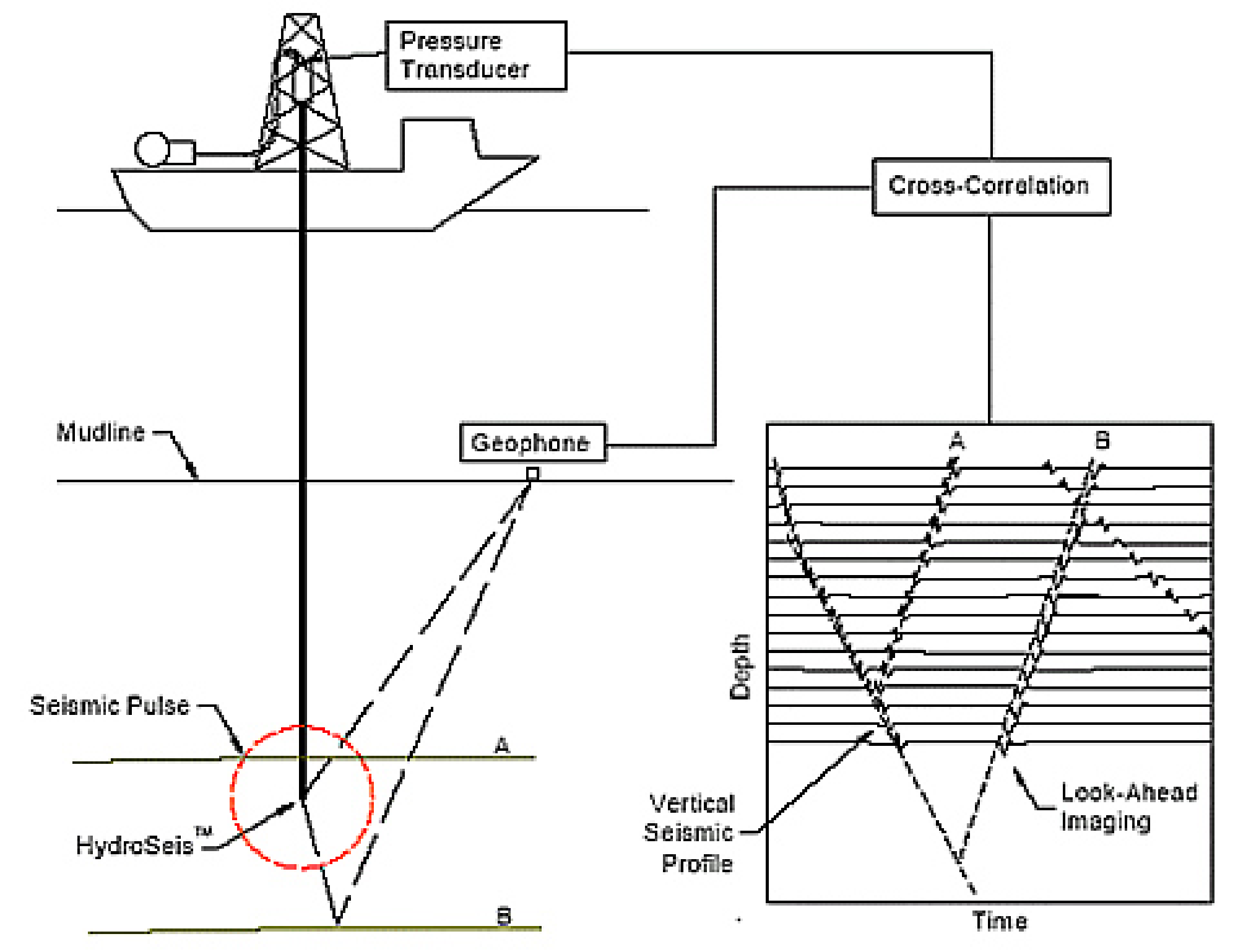
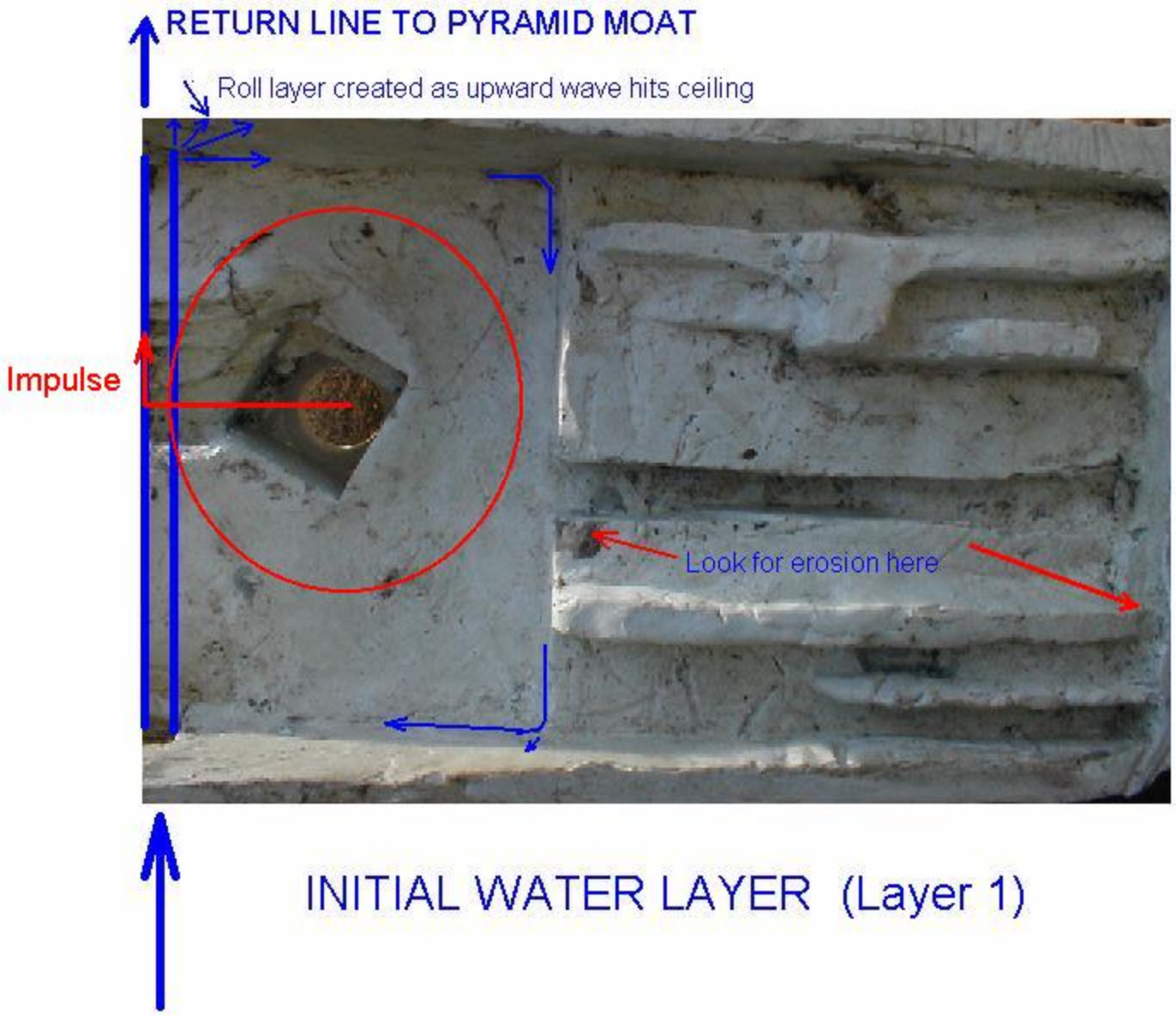

Pressure Transducer
Cross-Correlation
Mudline
Geophone
Seismic Pulse
A
HydroSeis™
B
A
B
Depth
Vertical Seismic Profile
Look-Ahead Imaging
Time


RETURN LINE TO PYRAMID MOAT
Roll layer created as upward wave hits ceiling
Impulse
Look for erosion here
INITIAL WATER LAYER (Layer 1)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